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György Enyedi Doctoral School of Regional Sciences

Theses of Doctoral (PhD) Dissertation

STUDY OF YOUNG FARMERS IN THE SAND DUNES AREA

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1. TOPIC RELEVANCE AND OBJECTIVES

The scientific orientation of my interest in agriculture, especially the problem of generational change, has unfolded during my university years. I am a young farmer, so I consider the future of our agriculture to be important, so my attention has increasingly shifted towards the younger generation, treating the owners of the Sand Dunes (Homokhátság) between the Danube and the Tisza as a priority segment.

Europe's demographic situation is characterized by a stark shift in age composition. The population becomes older, mainly due to the persistently low fertility rates and rising life expectancy. In Hungary, too, demographic conditions have primarily become critical not due to the loss of the population, but by the constant aging of the inhabitants.

The aging population partly entails the aging of the farming society, which is a serious problem throughout Europe, including Hungary. In the European Union (hereafter referred to as the EU), one third of farmers are over 65 and over 50% have crossed the age of 55. The severity of the problem is indicated by the fact that in Hungary, according to data surveyed in 2000, the proportion of agricultural workers under 35 years was estimated at around 20% and the agricultural area they utilized was 12%. At the turn of the millennium, for every farmer under the age of 35, there were three farmers who reached the age of 65. In 2010, this number has already increased to four, while in 2013 it has grown to nearly five. By contrast, the proportion of farmers under the age of 35 is only 6%, which shows that unfortunately the change in generations is not happening at the appropriate rate, the farming society is constantly aging.

In my research, I pay special attention to the young farmers of the Sand Dunes area of the Danube-Tisza interfluvium, because I assume that they have to deal with special problems that are particularly characteristic of this region. The phenomenon of aridification, a characteristic of this area, is a problem that has appeared decades ago in the 1960s and has since become more noticeable.

The objectives of my research, research questions, hypotheses and the test methods used to make hypotheses are summarized in Table 1.

Table 1: Comparison of objectives, hypotheses of the dissertation, questions of the survey and interviews, statistical and research methods applied

Research objectives	Research hypothesis	Survey questions used to test the hypothesis	Research and statistical methods
<i>C1: To survey the young farmers engaged in the agricultural production sector in the Homokhátság area, and to determine how and what role they can play in the sustainable development of the region.</i>	<i>(H1)</i> For the young farmers of Homokhátság, it is not the size of the farm that primarily determines environmental and economic sustainability.	<ul style="list-style-type: none"> • How do young farmers judge compliance of their own enterprises in terms of environmental and economic sustainability (development)? 	<p>Cross table analysis Interview Factor and cluster analysis</p>
<i>C2: To define what characterizes the individual decisions (initial motivation, land supply, land use, management strategies, asset allocation, inheritance, cooperation, further vision).</i>	<p><i>(H2)</i> Young farmers in the Homokhátság region possess the knowledge handed down through generations.</p> <p><i>(H3)</i> Future goals, economic outlook and future prospects of the farm are largely influenced by the motivation of why the young farmer began to deal with agricultural activity. Farmers who have only begun to engage in agriculture because of the young farmers' tenders are, in my opinion, will be abandoning farming activity within a few years.</p> <p><i>(H4)</i> Farmers who have only been engaged in farming for a few years and are not from an agricultural family are showing a greater willingness to cooperate than those who inherited the knowledge through generations.</p> <p><i>(H5)</i> The ability of young farmers to own land is greatly affected by the amendment of the Land Act (Act CXXII of 2013 on Agricultural and Forestry Land Acquisition). The access of young farmers to land has become more limited.</p>	<ul style="list-style-type: none"> • What motivated the young farmer to begin in agriculture, what sector he chose and how the initial motivation influenced his future plans? • Which perceived or real factors influence, or limit the possibility and access of future land purchase? • How does the willingness to cooperate among farmers develop and what are the underlying reasons behind it? • What kind of knowledge, experience, impressions young farmers have of the different subsidies - young farmers' applications, homestead development tenders? • Can farms run by young farmers contribute to supplying work to the immediate family or to people in the neighborhood, thus helping to keep the rural population in place, and reduce the aging trends of the settlement? • What are the reasons behind the fact that young people are less and less inclined to work in agriculture and why older farmers are unwilling or unable to transfer the farms to the younger generation? 	<p>Cross table analysis Interview</p>
<i>C3: Based on the foregoing, to define the role of the agricultural holdings led by young farmers in the social and economic development of the area under investigation.</i>			

Source: own compilation, 2017.

2.MATERIALS AND METHODS

2.1. Introduction of the Sand Dunesarea and its main features

The Sand Dunes cover an area of approximately 10000 km², which includes 117 settlements. (In previous researches (CSATÁRI, 2004, FARKAS, 2006) 104 settlements have been identified as belonging to the Homokhátság, but the latest surveys already consider 117 settlements.) The larger part is located in the small plain areas of the Danube-Tisza interfluvium but is not exactly the same. It is also often mentioned as being part the Kiskunság, but it is not included in the systematic division of Hungary's natural landscapes thus that the examined area cannot be included in one of the classical landscaping categories. The area cannot be clearly defined in the public administration either. Most of it is located in Bács-Kiskun county, but significant parts extend to Pest and Csongrád counties (Figure 1). CSATÁRI (2006) delineates Homokhátság as the intervention area of the government program aimed at reducing the adverse effects of the subsidence of subsurface water levels in the Danube-Tisza interfluvium.

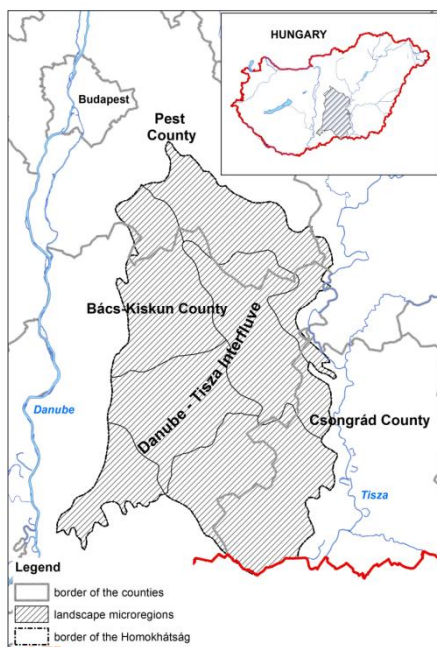


Fig. 1: Geographical location and extent of the Homokhátság
Source: KOVÁCS ET AL. (2017)

The phenomenon of aridification in the Danube-Tisza interfluve

The drying-out process characteristic of the Great Hungarian Plain, and in particular the Danube-Tisza interfluve, grew stronger in the second half of the 1980s due to lack of precipitation and some anthropogenic factors. The decrease of ground water level resulted in farming difficulties and caused changes in the wildlife of the area (RAKONCZAI - KOVÁCS, 2006). It primarily affects the flora, the agricultural and forestry sectors of the economy, but it has an adverse effect on all living beings, causing significant economic, social and environmental damage (VERMES, 2006).

The unpredictability of water supply and the unfavorable processes stemming from it can cause serious environmental and social problems. In the examined area there is a decrease in biodiversity, homogenization in the landscape, increased peripheralization, and the problem of exclusion and migration has also appeared. The phenomenon of water scarcity is related to sustainable farming, rural development, settlement planning, and social challenges (KOVÁCS et al., 2017).

Hungary's location within the Carpathian Basin has implications for many factors, including landscape, climatic, economic or social considerations. Summarizing the environmental, economic and social challenges of the region, Csatári draws attention to the need to assess the problems of the region with a systemic approach (Figure 2).

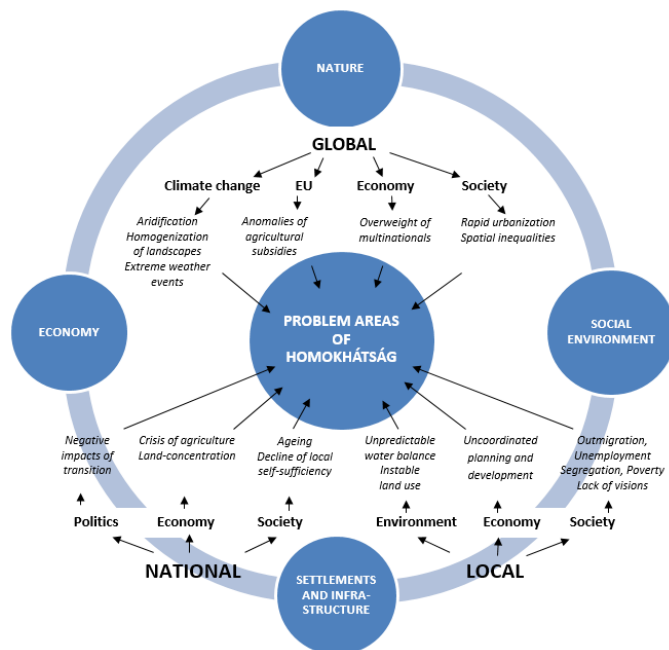


Fig. 2: Main factors of Homokhátság's problems

Source: KOVÁCS et al. (2017). based on the article of CSATÁRI (2009)

2.2 Method

In my research, I used qualitative and quantitative methods corresponding to the different questions (Table 1). Qualitative research was conducted through questions of deep interviews which cannot be quantified, and therefore no general conclusions can be drawn. Quantitative research results can be enumerated, generalized to the examined base population, and data can be analyzed by statistical methods. Qualitative and quantitative research should be carried out side by side and not as substitutes of each other (SAJTOS - MITEV, 2007).

The results of my empirical analysis were mainly based on surveys questionnaire and personal interviews. After questions from the questionnaire, I asked the questions of deep interviews that are currently related to the topic in question.

The starting point for my research was to involve farmers over 40, from the Homokhátság area, in the survey. The designation of the age group was based on the joint research of KSH and AGRYA, as in the AGRYA association, unlike in international practice, people under the age of 40 are considered young farmers.

It was important for me to include in the sample those who have implemented/realized their farms through the young farmers' tenders, that is, they have started farming without any agricultural background. In the selection of the target group, it was emphasized that farmers with arable crops, horticultural crops and livestock breeding were also included among the respondents, since extensive livestock production (although its importance is constantly decreasing) and horticultural cultures are still present in this area. The size of the farm was not considered during the selection, but it had to be located in the environmentally sensitive Sand Dunes area. I did not have a sampling frame. (At the beginning of my research I turned to AGRYA, the Association for Young Farmers, for the help. They have posted my questionnaire on their community portal, but I received little or no answers to this request, and some farmers not operating in the Homokhátság also filled the forms out. I found that for this reason, this form of questionnaire did not serve my original purpose - to survey the young farmers of Homokhátság - so I chose another way to get data.) The latest data available after personal verification revealed that according to the General Agricultural Compilation of 2010, there were 72039 people in 117 Homokhátság villages, of which the number of farmers under 35 was 5641. The population of the Homokhátság settlements was 624,274 in 2017, according to the data in KSH's Town Registry. Data for the Homokhátság area was not publicly available, so I got it from the KSH through personal request, broken down by settlements.

Based on the above, the survey cannot be considered representative, the findings should be treated with this reservation. At the same time, it is suitable for

indicating the economic and social processes typical of the given area, which relate to young farmers engaged in agricultural production.

My sample was comprised of farmers working as private entrepreneurs. I have personally contacted the owners in the Homokhátság under 40, so I total I visited a 124 young farmers (Figure 3). The interviewees were selected using the snowball method. This procedure is usually used for exploratory purposes (BABBIE, 2008, p. 207) where sampling error is also higher. At the initial stage of my research, I asked the help of village consultants to select the farmers. It has caused me great difficulties that due to some refusals there were settlements I did not reach, so I could not get any further addresses or contacts either.

Questionnaires were distributed and interviews were conducted between October 2016 and March 2017. The timing of the query was deliberately chosen because at this interval farmers have more leisure time available. At labor intensive periods the willingness to respond would have been even lower. For the research, it was important to find out up front whether the surveyed people were under the age of 40 and in the Homokhátság area, so I raised demographic and personal questions at the beginning of my questionnaire.

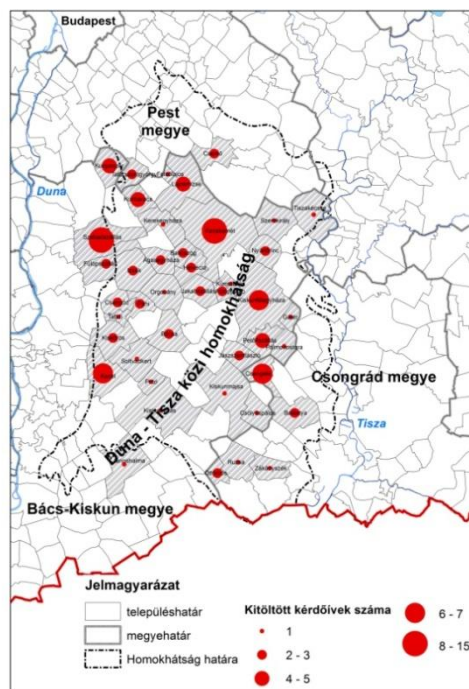


Fig. 3: Determination of sampling per settlements

Source: own compilation, 2017.

From the simple statistical methods, I applied the mean, the standard deviation and the distribution. The data was evaluated with SPSS. Using the cross-table analysis I examined the following relationships (Table 2).

Table 2: Questions of the cross-table analysis

1.	awareness of the machine-rings among young farmers surveyed	willingness to cooperate for joint equipment purchasing (power tools, harvesters and machinery)
2.	willingness to lend machinery	cooperation for joint equipment purchasing (power tools, harvesters and machinery)
3.		size of land owned
4.	preparer of the proposal for the tender of the start-up of young farmers	education of applicants
5.	agricultural education of farmers	environmental sustainability of farms
6.	form of farming (conventional, eco, mixed, transitional)	environmental sustainability of farms
7.	size of the land owned by the farmers surveyed	economic sustainability of farms
8.	per capita monthly net income of the family	use of renewable energy sources
9.	young farmers with homesteads	use between renewable energy sources
10.	nature of motivation (parents were also farmers, had to take the farm over)	relationship with inheritance of machinery
11.	Justification for successful young farmer tender	conversion to organic farming
12.	willingness to lend own machinery	nature of motivation (parents were also farmers, had to take the farm over)
13.		basis of motivation (was interested in nature from childhood, had no agricultural ties)
14.	gender of respondent	distribution of income from agriculture
15.		kényszer szülte megoldás a mezőgazdasággal való foglalkozás
16.	size of land owned	assessment of own machinery supply
17.		need to purchase land in the future
18.		distribution of income from agriculture
19.		utilization of hired work
20.		the young farmer performs work as a main occupation or part-time
21.	successful young farmers tender	providing other services at present (e.g. tourism)
22.		other services planned (e.g. tourism) in the future

Source: own compilation, 2017.

Factor analysis is not a single statistical procedure but a collection of concepts. We use metric variables for factor analysis, but the use of dummy variables (0 and 1) is also allowed and widespread, so I could also apply it to the answers to the questions in my questionnaire. There are two types of exploratory factor analysis, of which the common factor analysis and main component analysis are distinguished (SAJTOS-MITEV, 2007).

With the help of factor analysis, I have examined those issues affecting the future of the enterprises that could determine the future goals of young farmers. I also examined issues affecting the environmental sustainability of young farmers' economies. The set of variables analyzed was determined based on the questions that could affect the environmental sustainability of farms. I have also looked at issues relating to young farmer tenders among those who already had experience in the application. The questions asked were answered by young farmers who already had a successful tender.

The purpose of cluster analysis is to arrange the observation units into homogeneous groups based on the variables included in the analysis. It can be used primarily as an exploratory technique. Unlike factor analysis, it does not reduce the number of variables but the number of observation units (SAJTOS - MITEV, 2007). Clusters were obtained through *factors influencing the future of farms and factors affecting the environmental sustainability of farms*.

3. RESULTS

3.1. Questions relating to motivation, farm holdings, plant- and livestock

The survey found that the distance from the place of residence does not affect the possibility of discontinuing agricultural activity, because owners whose residence is more than 40 km away from their farm treat it as family heritage, it is important to them and would not abandon it.

Multiple answers were available to the question as to why they started dealing with agriculture. Of the 124 respondents, 43 (34.6%) started farming because they grew up around it and took over the farm. In one third of cases, this was also due to the fact that the head of the family died (either man or woman) and the new owner was forced to take over the farm, but in this case only the timing happened sooner as the respondent would have probably later chosen agriculture anyways. In the case of 26 people, in the absence of other possibilities, the existence of a family farm has become their means of subsistence. Another possibility was that the parents or the wider family introduced them to agriculture and started them in this path. This was marked by 78 (62.9%) respondents. Three people had no other means of livelihood and therefore chose agriculture as a single breadwinner option. 12 people (9.7%), despite their lack of attachment to agriculture or previous experience, named their love, interest, and commitment to nature and agriculture as motivating factor. 15 people have identified other reasons of motivation, for example, that they married into a family of agriculture. The interview responses also confirmed the fact that the farmers who had to take over the farm did so partly because the parent, the former owner, had died ahead of time. The cross-table analysis also showed that farmers who reported that they had to take control of the farm had also inherited agricultural equipment (Figure 4).

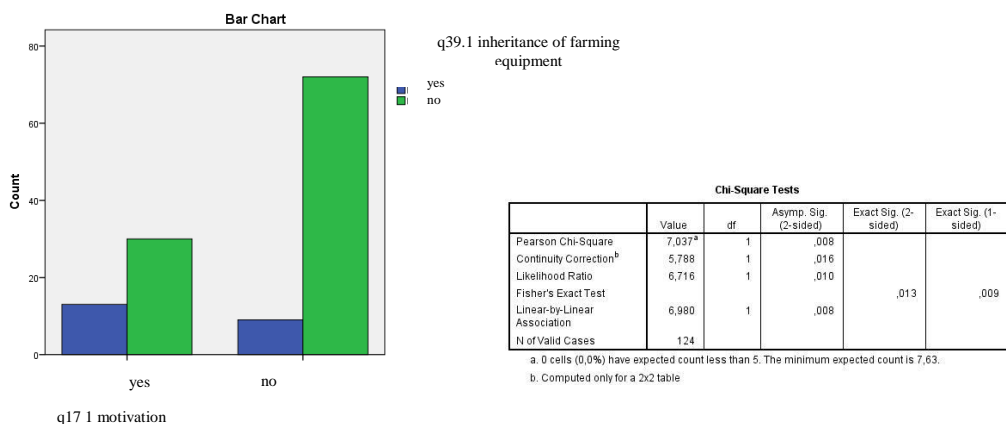


Fig. 4: Relationship between motivation and inheritance of farming equipment

Source: based on own research, own compilation, 2017.

Symmetric indicators are significant but there is a weak link between the two variables.

May 1st of 2014), 47 young farmers (37.9%) purchased land, thus faced with the difficulties and challenges of the new land law. Most respondents, 88 (71%) still want to expand their land area, but 36 farmers (29%) do not plan on doing so. Most of the 36 owners (17 people) no longer wish to expand their economies. According to 11 respondents, there is no land for sale in the area, while 7 explained their response with lack of funding. It is also typical that larger farms, with more capital behind them, buy up land in the area. This was also reported by those farmers who wish to expand their territory in the next five years, but this poses a major threat and limit to expansion.

More than half of the farms (63) involved in the survey, do not deal with animal husbandry at all. In summary, the data consisted of 62 (50%) crops, 4 (3.2%) livestock farms and 58 (46.8%) mixed farms (plant and livestock breeding). (Farms that hold 1-2 pigs for fattening are not included in mixed farms, but have been classified as crop farming.)

76 respondents (61.3%) are full time, while 48 (38.7%) are part-time farmers. 75.8% of the farms in the survey (94 farms) can or could be able to provide permanent or seasonal jobs for the locals. 30 farms (24.2%) do not or are not yet able to provide jobs. However, according to several owners, the problem of labor shortage is becoming a bigger and more cumbersome challenge year after year, which applies not only to skilled workers, but also to seasonal workers. It is not typical for the locals to go and work on the neighborhood farms. Over the last few years, it is a typical problem that the labor shortage cannot be compensated by increasing hourly wages. The number of casual workers coming from the other side of the border, from neighboring Romania or the Ukraine, is less and less every year, because they are not longer coming to Hungary, but instead are looking for job opportunities in Western countries in the hope of more favorable hourly wages. The biggest and most acute problem identified by the respondents, which affects the future of the farms, was the lack of labor force.

As future plans, 109 farmers (87.9%) aim to invest, mainly for development purposes. Many (9 people) are thinking of buying a harvester (combine), even though they are smaller farmers. At present, they are using the services of bigger farmers. It can be inferred from these responses that machine services, co-operations do not work smoothly in our country. 15 farmers (12%) are satisfied with their equipment pool, everything is available to manage the farms efficiently. In most cases, the purchase of power tools and equipment (49 responses) would be made from own resources which 45 farmers would supplement using tenders. 36 interviewees would only rely on subsidies for funding. Ten respondents plan to borrow funds. Out of this, one candidate plans to use own funds and loans, five of them own funds and credit, one loans and grants and four a combination of loans and tenders.

My first question aimed at cooperation was to find out whether owners were lending their machinery to a neighbor, a friend, or a friend as a favor. Of the 124 respondents, 52 farmers (41.9%) did not lend their equipment, while 58 (46.7%) answered yes. According to the reports, personal bad experience has led eight people (6.4%) who have previously lent their machines to discontinue this practice. Farmers who lend their machines are reluctant to do so. Of the young farmers interviewed, 57 (45.9%) are willing to cooperate, while 67 (54.1%) would not purchase power tools or equipment with their peers. According to them, due to unclear legal background, bad experiences and lack of trust, they would rather not share.

As a result of my question about the availability of machinery lending rings, most of the respondents had not heard of them yet (95, 76.6%), they were completely unknown to them. During the personal visits I explained what the significance of the lending rings was. In the opinion of the respondents, this kind of co-operation between the farmers in Hungary does not really work because of the Hungarian mentality and the lack or loss of trust. I was looking for a correlation between knowledge of the machine rings and willingness to cooperate on joint equipment purchases. Knowing about the machinery rings did not affect the willingness to cooperate.

Cross-table analysis was performed between the lending of machines and the willingness to jointly buy power tools or machines. I was wondering whether farmers who lend their equipment would show a greater willingness to buy power tools together with other farmers or their family. The null hypothesis is fulfilled in this case, as the test demonstrates that there is no significant correlation between the two questions examined. Those farmers who lend their machines, at the same time may not be buying machines together. Farmers who lend their machines to others do so to help out, transferring or sharing ownership on the other hand is not acceptable.

There was no demonstrable relationship between the size of the estate and the willingness to lend the machines, so it is not true that the more powerful farmers with larger land are more willing to loan their power tools and equipment. During personal visits, it turned out that farmers with larger land prefer to hire out or assist their peers. There was another feature that prevented the lending of equipment - that in their case, the up-to-date machines were incompatible with the old types of tools that are still typical of smaller farms.

3.2. Questions relating to access and use of grants

Of the farmers who participated in the sample, 54 (43.5%) submitted a tender for start-up support for young farmers in the past, and another 15 (12%) were planning to submit the application in the next bidding cycle (2017). Three people (3.2%) submitted an application but failed. It is typical that most of them have been assisted by a professional tender writer (49 people). 11 people wrote the application themselves. One person turned to a consultant and one person

asked for help from a familiar young farmer. Of the 20 young farmers who had won a grant, without the financial support they could not have started their farm, 32 farmers would not have been able to make improvements in such a short time. Five people would have begun a business anyway, but the aid reduced their risk.

By cross-table analysis, I have found that even those young farmers who have a tertiary (college or university) qualification have utilized tender prepares to write their proposals, regardless of whether the respondent has a basic, secondary or higher education qualification. (In the sample, 62 people have already had a tender prepared as during the survey the 2016 Young Farmer's Call was already launched.) Those interviewed who made the application themselves would not change anything on the submitted application material or business plan (6 people). At the same time, those who did not prepare the proposals themselves, but with a tender writer, reported that they had negative experiences. One of them said that he would expect to receive more information from the application writer, while 10 people were not able to fulfill the conditions of the application, which were largely taken up based on the counselor's advice, because without these commitments the application would not have been successful. Four respondents would not submit an application ever again, which was mainly explained by administrative difficulties, and the complexity of becoming a private entrepreneur. One person interviewed has made more commitments in the 2016 bid than previously, as in the previous announcement he did not win.

Those who did not submit a tender (51 people) explained that they did not meet the requirements of the proposals (they have already applied for area-based subsidies prior to the announcement or have been farming for more than five years (36 persons)). The reasons for not applying were: unacceptable conditions (17 persons), followed by "I do not trust the call for proposals" (7 persons), 6 persons due to lack of educational requirements, 4 for lack of information, while 2 persons did not apply due to administrative difficulties.

Area-based support is used by 98 (79%) of the respondents. The 26 (21%) young farmers who do not use area-based support are mainly engaged in animal husbandry and horticultural production. The feed needed for the animals are purchased and not produced in their own area. Area-based support, in their opinion, is necessary for effective management, but many did not agree with the statement that it is necessary to compensate for losses. In average of 3.5 percent said that "there was no such aid before, yet we managed successfully", indicating that they rather agreed with this, but added that the existence of more favorable market and sales conditions would make area-based payments unnecessary.

Of the respondents, 119 people (95.9%) heard about the farm development tender, which was submitted by 22 of them. Twelve people reported winning entries and 20 more will be submitting a bid in the near future when a new call appears. 10 owners had failed applications.

3.3. Questions relating to environmental protection and sustainability

Looking at the environmental and economic sustainability of farms, it can be stated that most of the respondents (77.4%) think that their economy is in compliance with environmental sustainability, 91.1% believe that their economy can develop in the near future, so the principles of economic sustainability also prevail. During the personal conversations it turned out that farmers who do not consider their farms to be environmentally sustainable are primarily concerned with the problem of water availability, its quality and quantity are both an issue. Both with plastic sheeting and garden horticulture and in livestock farms the amount of water abstraction is worrisome for the future. The use of renewable energy sources is still quite new among the young farmers surveyed, with 20 of the 124 farmers using renewable energy sources (16.1%). Several farmers also indicated that due to lack of resources they could not obtain alternative energy sources so far, but if there was a tender available, they would be happy to use it or try one of its forms. Most households and farms use solar energy followed by biomass. 11 households only use solar energy, and 4 respondents use only biomass. One farm uses wind energy, 10 solar energy and 3 farms biomass. I examined the relationship between the per capita monthly net income of the family and the use of renewable energy sources. Most farmers with higher incomes (100 000 HUF/person) can afford to use renewable energy sources (Figure 5).

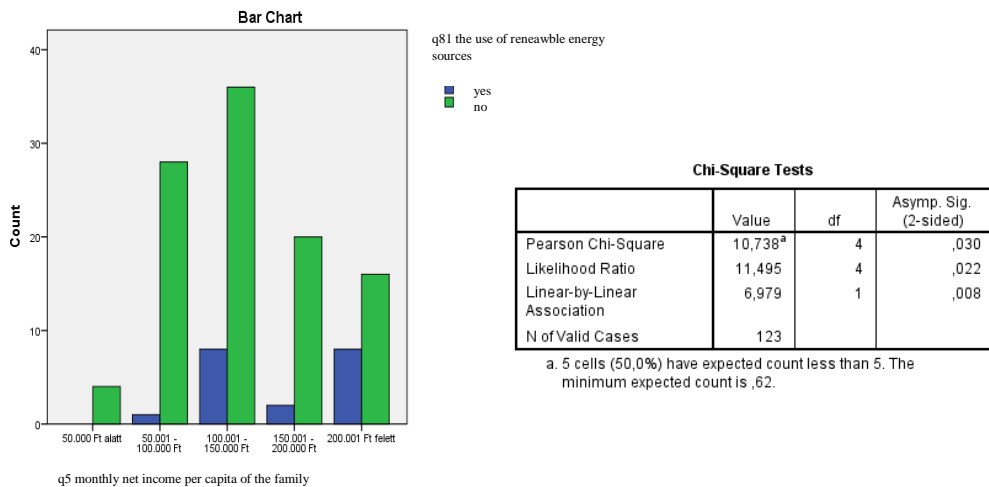


Fig. 5: Relationship between the use of renewable energy sources and monthly net income per capita of the family

Source: based on own research, own compilation, 2017.

Symmetric indicators are all significant, but there is a weak link between the two variables. It is characteristic of the producers involved in the research that renewable energy sources are not primarily used by farmers with homesteads. I did not find any significant correlation between the use of renewable energy sources and farmers with homesteads. This finding suggests that these farmers

did not invest in renewable energy sources from the farm development tender, but from their own sources.

There was no correlation between the opinion on the environmental sustainability of farms and the agricultural education of respondents. Of the 28 young farmers who do not think their farm is environmentally sustainable, most of them (15 persons) have college or university degrees, but there are also those with vocational training (5), one with highschool diploma and seven with technician qualifications. Three of them did not have a degree in agriculture.

Of the 124 interviewees, eight are involved in organic farming, and 20 people plan to migrate to organic farming. 95 people do not plan to transition from conventional farming at all. The main reason mentioned were: "I do not believe that you can produce without chemicals" (25) and the "labor shortage" (25). Among other things, it has been mentioned that the currently cultivated varieties can not be produced within the framework of organic farming (for example, apple plantations need plant protection treatments 23-28 times a year).

Under economic sustainability, we mean that the farms can at least achieve the result necessary for simple reproduction. Economic sustainability is not influenced by the size (ha) of own area. Owners of smaller and bigger farms also claimed to comply with the criterion of economic sustainability (development).

Farmers who own larger lands are also often subcontracting in the area (Figure 6). They are primarily helping smaller farms who do not have the right power tools and machines to cultivate their own, typically smaller area, or to carry out the necessary harvesting and other work.

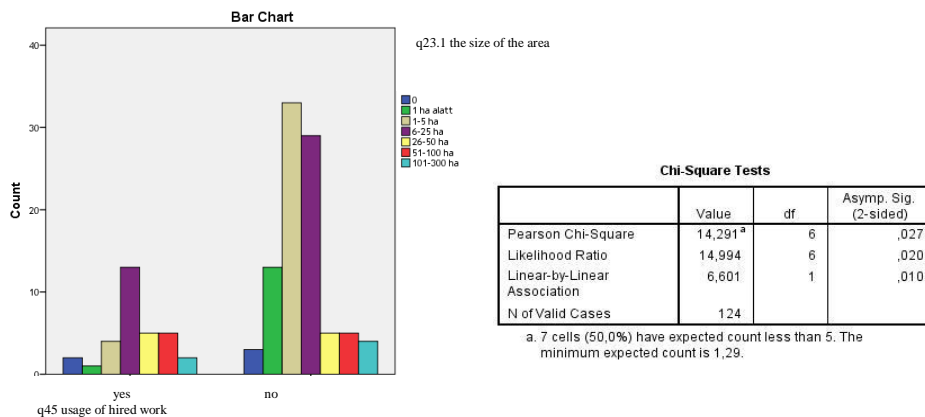


Fig. 6: Relationship between the size of the area and usage of hired work

Source: based on own research own compilation, 2017.

Symmetric indicators are significant but there is a weak link between the two variables

The fact that a young farmer is farming on a larger or smaller area does not affect whether they are engaged in full or part-time. Many of the farmers involved in the survey are producing crops under plastic sheeting or in a greenhouse, so they are growing on a smaller area than crop farmers.

Next, I sought to find out whether having agricultural forebearers affects a farmer's willingness to lend his machines as a courtesy. It is known that elderly farmers are rather unwilling to cooperate due to the negative experiences of the previous system and are reluctant to lend out their machines. However, the analysis shows that young farmers involved in the survey are also reluctant to lend their machines, which is mainly due to personal experience.

The size of the land owned is related to the owner's machine and asset supply. It is characteristic that farmers with a larger area have their own machine and equipment parks, thus solving a significant part of the workflows on the farm with their own machines and needing no subcontracting work or external services (Figure 7).

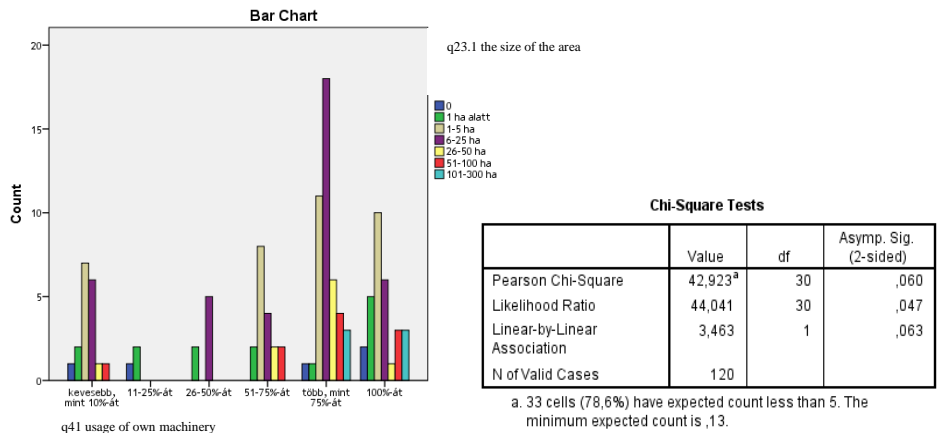


Fig. 7: Relationship between the size of the area and usage of own machinery

Source: based on own research own compilation, 2017.

Farmers who are currently growing on a smaller area will want to expand their territory in the future, because they are planning to buy land within 5 years once they have the opportunity. The capital-rich farmers with a larger farm also have a tendency to increase their own holdings in the near future, so the size of the current holdings does not influence the future intention to buy land.

In the case of the examined sample, the distribution of income from agriculture within total income is not affected by the size of the owner's own area, since production of crops in greenhouse or under plastic takes place in a smaller area, thus even on that smaller area production can be profitable. This explains why I did not find any correlation between the size of the owned area and the percentage distribution of income from agriculture.

As far as the start-up support for young farmers is concerned, those launching additional services (e.g. tourism) received extra credit. It was not typical for the farmers participating in the survey that those submitting young farmer tenders would plan to start other services in the future, as there is no significant correlation between the answer to the two questions.

The results of the cross-table analysis are summarized in Table 3.

Table 3: Investigation of the relationships between the variable pairs of the cross-table analyzes

1.	awareness of the machine-rings among young farmers surveyed	willingness to cooperate for joint equipment purchasing (power tools, harvesters and machinery)	there is no significant relationship
2.	willingness to lend machinery	cooperation for joint equipment purchasing (power tools, harvesters and machinery)	there is no significant relationship
3.		size of land owned	there is no significant relationship
4.	preparer of the proposal for the tender of the start-up of young farmers	education of applicants	there is no significant relationship
5.	agricultural education of farmers	environmental sustainability of farms	there is no significant relationship
6.	form of farming (conventional, eco, mixed, transitional)	environmental sustainability of farms	there is no significant relationship
7.	size of the land owned by the farmers surveyed	economic sustainability of farms	there is no significant relationship
8.	per capita monthly net income of the family	use of renewable energy sources	there is a significant relationship
9.	young farmers with homesteads	use between renewable energy sources	there is no significant relationship
10.	nature of motivation (parents were also farmers, had to take the farm over)	relationship with inheritance of machinery	there is a significant relationship
11.	Justification for successful young farmer tender	conversion to organic farming	there is no significant relationship
12.	willingness to lend own machinery	nature of motivation (parents were also farmers, had to take the farm over)	there is no significant relationship
13.		basis of motivation (was interested in nature from childhood, had no agricultural ties)	there is no significant relationship
14.	gender of respondent	distribution of income from agriculture	there is no significant relationship
15.		kényszer szülte megoldás a mezőgazdasággal való foglalkozás	there is no significant relationship
16.	size of land owned	assessment of own machinery supply	there is no significant relationship
17.		need to purchase land in the future	there is no significant relationship
18.		distribution of income from agriculture	there is no significant relationship
19.		utilization of hired work	there is a significant relationship
20.		the young farmer performs work as a main occupation or part-time	there is no significant relationship
21.	successful young farmers tender	providing other services at present (e.g. tourism)	there is no significant relationship
22.		other services planned (e.g. tourism) in the future	there is no significant relationship

Source: based on own research own compilation, 2017.

3.4. Summary and evaluation of the answers from the deep interviews

Future plans and perspectives of young farmers

During my interview, to my question of whether the young farmers are planning to abandon the agricultural activity in the future, clear and definite answers have been presented. 119 people (95.6%) do not plan on stopping farming. 78 young farmers continue farming in the future because their parents, their extended family made him fall in love with it, he was born into it, he has done this since childhood and according to them one can only “die” out of it. Their commitment to agriculture is clear from their answers: because it is a relaxation rather than an actual work, it is a profession that has been created by the family and the management is a decades-long process that provides some degree of independence. I attach great importance to these statements, as we shall see later. There are some farmers who carry on the family heritage, it is important for them to continue the traditions, the hard work of the ancestors, there is an emotional attachment to the farm. This can also be observed with farmers whose farm is more than 10 km from their place of residence. Among those interviewed, there were farmers who left their well-earning job behind to learn from their father for a while, to slowly take over the lead, to continue the management of a well-functioning family farm, but for the time being only in the background because of the conflict between generations (father-son disagreement).

Other studies have also shown that it is important for farmers to be their own masters. In my experience, farmers attributed special importance to aspects that are associated with agricultural activity. Such were the love of earth, working outdoors, variety and independence. Financial return, working time or conditions and freedom were listed as less important than those listed above.

During my personal visits, it was often a problem for the farmers were not able to separate their own farm from that of the parent. They report a kind of process, the operation of a farm. It was not the people, not the owner, that was important, but the farm and farming itself. Here, too, the importance of knowledge inherited by generations has become evident to me.

Young farmers would like to develop and grow their farms, as it was obvious from their aim to purchase more power tools and land, and not to abandon their farms. Many (18, 14.5%) think it is profitable to live in agriculture if they have enough expertise and knowledge. It is a good source of income despite hard work. The government and the European Union also support farmers because they need to feed the world's population.

Only 5 people replied that they would most likely stop or that they are uncertain about the future. Among other things, the problem of labor shortage, market and livelihood uncertainties, and loss-generating production were mentioned. They perceive the effects of global climate change, but they can defend against it by selecting new suitable strains or by changing varieties.

Perceivable effects of the new Land Act

The new land law is less well-known to those who have not bought land since its introduction. Of the respondents, 47 farmers have purchased land since May 1, 2014, so I rely primarily on their opinion and experience. The land value map of OTP also supports the fact that since the new land law, land prices have risen steadily. It is typical that older farmers are competing for land and pushing market prices upwards, so younger, less wealthy farmers can not purchase land. The length of administration and the difficulties involved not only affect young farmers, it is perceived by all them.

In particular, farmers with livestock enjoy the opportunities presented by pre-emption rights. Many expect land-based subsidies to be reduced or discontinued which will increase land supply. At present, often the real farmers are the ones not able to get land, and land speculation is widespread. Many believe that by ending subsidies and tightening access, the land market will be revitalized and those farmers will actually be able to purchase land who want to manage the farms and produce on them and not those who are only buying land out of speculation to have access to the subsidies. Six respondents think that young farmers enjoy priority in land acquisition, which they themselves have also experienced. Land lease was more common among farmers who have been farming for a long time.

According to farmers, on the one hand, area-based support is required, but on the other hand, they hope that due to the reduced subsidies the land market will be renewed, and thus they can also increase their territory. Non-livestock farmers will not want to deal with this branch of agriculture in the future as the "socially unacceptable hours" in the livestock sector are typical (they have to work on holidays, on Sundays and in several times of the day) and do not want to spend the rest of their spare time with the animals.

Experiences on area-based support, start-up support for young farmers and on tenders for farm development

Area-based subsidies are said to be needed by most farmers and, where appropriate, can even compensate for losses in the most extreme years. Farmers exposed to extreme weather conditions are more in need of support than farmers growing in higher quality areas. However, management should not be based solely on subsidies.

The farmers who received a grant under the tender for start-up support for young farmers had a mixed opinion on the application. In the hope of a successful application, they rather undertook more objectives in the business plan (10 people), knowing that they would have to pay a penalty, than not winning the tender. They said, they agreed to take on more commitments based on the advice of the tender preparer to make sure that the application was successful. However, the

sum of the penalties and taxes in many cases ate up the total amount of the subsidies received.

Eleven respondents stated that they had written the application themselves, thus only input those conditions in the application they felt they could fulfill as expected. Nine farmers were able to meet conditions so they would not change anything if they would submit their application now. Four farmers would not re-submit their application at all because, due to becoming a sole entrepreneur, the payment of taxes took away a significant part of the amount gained. The tender was typically needed for the development of the enterprise among the young farmers interviewed, and in particular it accelerated the pace of development.

In the framework of the farmstead development tender, the winning farmers were able to expand livestock, purchase machinery, tools, seed, pens and fences. In three agricultural farms, they were able to obtain renewable energy sources from the farm development tender, where the lack of electricity was solved by solar energy. However, for agricultural farms, the amount of homestead development tenders is small, cannot be used to make large purchases or invest in equipment.

Questions on environmental sustainability issues

The question "what does the phrase that we have borrowed the Earth from our grandchildren mean to you" proved to be a difficult concept to understand and explain to most of the interviewees. Most of them interpreted it as 'I am trying to live and manage by it' and only a few of them understood the true meaning behind it. Based on the opinions, to date, the majority of farmers do not take into account environmental protection rules or regulations.

This also predicts that a change in farming practices is needed as the current practice can not be maintained. Three of the young farmers mentioned the significant amount of water consumption for their own farms, which, in particular, is a significant quantity for vegetable and greenhouse crops and livestock production. There are some farms where the water abstraction method is not even tied to permits. There are many unlicensed, illegally drilled wells in the area. The amount of water used is not paid for by farmers, which leads to wasteful practices.

For fruit producers, especially in the case of apple farms, pesticide treatments up to 25-28 times per year are necessary, which is not beneficial to the fauna. According to the responding farmer, "it would be good to reduce the number of sprays to a minimum, but the current varieties do not allow this, because buyers are looking for apples that are pretty and of good size."

Several young farmers (21, 17%) are trying to leave their land at least in the same shape as they have received it. There were some typical answers, "I'm trying to manage like this," or "we would have to manage like this," but to me this did not mean that they actually farm like this. In addition to the general environmental aspirations ("we use organic fertilizer", "do not burn plastic

waste", "oil does not drip from the machines", "do not unnecessarily release a plant protection product") composting was also mentioned. No mention was made of fertilizing according to a nutrition management plan. As far as the farm is concerned, many use biological plant protection, gray-digestive bacteria and as far as possible try to replenish the nutrient content of the soil with organic fertilizers, or are using plant protection products in a timely and appropriate manner. In most livestock holdings, however, the issue of manure storage has not yet been solved, due to expensive investment costs. Packaging materials and chemicals are placed at collecting points and there was a farmer who mentioned that it is possible to place plastic packaging materials and foils at the local government. There have been some farms where organic farming is not yet a practice, but they use plant protection products that can be used in organic farming.

The greening initiative has divided the respondents. The issue does not affect farmers who are producing in greenhouses or under plastic covering, because greening is only mandatory for arable crops and grasslands. Greening would be a good start because it would bring nutrients back to the soil, but depending on the crop structure, sowing time and the number of soil compacting could reduce its effect. Most are on the opinion that an impact study should be carried out on how useful this is for the environment. According to many, farmers are only doing it for the money, and there are no conscious environmental protection efforts or environmentally friendly farming practices behind it. Plant diversification and the abolition of monoculture are only implemented in exchange for the grants. There is still no progress in the formulation of attitudes, as in most cases it is the amount of support that matters and not environmental protection itself.

Generational change, aging farmers

To the question of why agriculture is not an attractive profession for young people, why the generational change took an unfavorable turn, I received unanimous answers. The perception of agriculture is fairly bad, it is hard work and not easy to make money off it. Parents and family do not teach their children to love farming, but consider it a necessary bad with lots of constraints. Most young farmers interviewed in the sample, however, love their work because their parents and their extended family members have been fond of it too. However, in their view, the majority of young people do not consider it a "trendy", fashionable job instead they try to earn money with intellectual work. According to their opinion, the farm built by their parents is not valued by the child, even if it is a well-functioning enterprise. According to others, motivation by the parents plays a significant role in the child's choice of profession. This is also confirmed by GASSON AND ERRINGTON (1999), according to whom family has a strong influence on a child's career choice. This is especially true for children who grew up in a farming family, so their choice was limited in

whether they wanted to be farmers or not. They have been socially integrated into this role and have learned to value the farm already in their childhood. In contrast, some farmers believe that their children are struggling in smaller farms, while their living standards are far below those of other sectors. In other cases, individual desires are more accepted than family traditions. Older farmers want their children to choose a lighter life and not look for their prosperity and livelihood in agriculture.

Some of the older farmers do not want to hand over, while others do not know to whom to leave their farms. Owners who do not want to part with their farms do so partly because next to their pension it continues to be a source of additional income, providing them financial security. After the change of regime, the farmers are clinging on to their hardly purchased, acquired or repossessed lands. Agriculture has become an integral part of their lives from which they do not want part until the day they die, even by handing the property over to their own sons. As another possible cause, they often mention that they do not trust that their own child would be able to manage the farm properly. Repossessed land means a lot to the old masters, they do not want to lose it again or to see it go to seeds, as a long-established and profitable farm in which a work of a lifetime lies can easily fall on hard times even in a year. For many, the whole or partial handover of the farm means a declining state, signaling the end of their work, old age and passing on. According to the surveyed farmers, the lack of trust and differing viewpoints between generations can play a role in not transferring the farms to the younger generation.

3.5. Results of the factor and cluster analysis

Factor analysis of issues affecting the future of farms

In the analysis, the 5 factors received the following names, that define the future goals of farms for young farmers and the sustainability of farms (Table 34):

1. *Equipment supply Factor*: In this case, a self-owned power tool or equipment will be added, which is explained by the fact that the presence of a power tool also entails the presence of other equipment.
2. *Mobility factor*: this can be explained by the fact that even farmers who own larger territories showed willingness to move away (few farmers had declared this)
3. *Willingness to lease as a function of years in farming factor*: the length of time spent in farming correlates with the size of existing area (leased or owned).
4. *Sector co-operation factor*: co-operations correlate primarily with the presence of arable crops.
5. *Economic sustainability factor*: positively correlates with the existence of self-owned machinery. This is explained by the fact that the existence

or planned purchase of a self-owned harvester can greatly increase the safety of harvesting for farmers.

Factor analysis of issues relating to environmental sustainability of farms

During the analysis, the 6 factors have received the following names, which define the relationships of young farmers to environmental sustainability:

1. *Direct environmental protection measures of the household factor*: those environmental measures were included here, which farmers themselves are able to decide if they want to undertake in order to protect their environment.
2. *Environmental protection measures of the household limited by capability*: includes factors that are independent of the decisions of the farmers (e.g. selective waste and sewage collection in the settlement and in the outskirts).
3. In the case of *greening of own area factor* greening and arable crops take positive values, which shows that greening is a compulsory element for arable land above a certain size. The two values negatively correlate with the size of the area because arable crops could also be produced on smaller areas while greening is a "task" for larger farms in order to gain extra subsidies.
4. In the case of *connection between plantation and livestock breeding factors*, running a plantation does not entail animal husbandry.
5. *Horticultural farms meet the criterion of environmental sustainability* according to factor 5.
6. Based on the last factor, meeting market needs, *most farms do not want to deal with organic farming, at the same time they do not meet environmental sustainability standards either*. Satisfying market demands and successful selling are their primary considerations.

Environmental protection measures in the households are influenced by the greening projects required as part of the environmental programs, as well as the cultivation branches, the priority of animal husbandry and adaptation to market needs.

Factor analysis of the young farmer tenders

With the help of the factor analysis, I also examined issues relating to young farmers' applications among those who already had experience with the application process. The questions asked were answered by young farmers who had a successful tender (54 persons).

During the factor analysis, 3 factors could be named:

1. *Difficulties directly related to the application;*
2. *Other Difficulties;*
3. *Thinking about submitting a proposal.*

Cluster analysis

Cluster analysis can be successful if the units are similar to their counterparts, but they differ from the other group elements. In this case, I used the hierarchical method of clustering. I used previously saved factors (latent variables) for cluster analysis. The interpretation of the clusters was done by comparing the mean. The result shows two distinct clusters after testing. (Only in this case are the intra-group variances lower than the total deviation). The first cluster had 114 farms, while the second cluster had 10.

The first cluster is characterized by better than average equipment supply, whereby the issue of economic sustainability appears. In the case of the second cluster, the size of the area is above the average, but the size of the machine park, leased area, cooperation and economic sustainability are below average. In the case of the larger group, therefore, equipment availability presupposes economic sustainability. However, with respect to the smaller cluster, the size of the area is decisive.

The first cluster I named the *Importance of machine availability*, and the second the *Importance of land*.

I selected two-stage cluster analysis for *environmental sustainability* because I received very scattered results with the hierarchical method, and intra-group variance showed a higher value than that of the whole group. The first cluster had 22 farms, the second 25, the third 32, and the fourth 37 farms. In the first cluster, the household's environmental protection shows the highest value possible. In the second, the role of plantation and animal husbandry is decisive. In the third cluster, the immediate environmental protection of the household stands out. In the fourth cluster, adaptation to the market and greening of their own area show higher values.

Based on this, in the first group we find those people for whom environmental protection is important, but they can only do so if the necessary conditions are met (access to the sewer network, selective garbage collection).

In the second group we find those engaged in plantation farming or animal husbandry. Plantation farms with integrated plant protection put higher emphasis on environmental protection. Animal husbandry farms can use organic fertilizers, thus increasing the nutritional capacity of the soil, but in many cases the storage of organic fertilizer has not yet been solved.

The third cluster is comprised of farmers who make conscious environmental efforts in their households out of their own choice. In the fourth cluster,

adaptation to the market and greening of the area took place. This group of farmers is characterized by their adaptation to the market needs. Greening is burdensome for them, however they are doing it for the extra subsidies (mostly for larger farms, over 10 ha it is required).

3.6. Testing the hypotheses of the research

My research hypothesis that **for the young farmers of the Homokhátság it is not primarily the size of the farm that determines the environmental and economic sustainability, I considered it justified.** During the cluster analysis, I determined that the future objectives of the farms, their economic sustainability and their development are determined by machine and asset supply, and in the smaller supply of land cluster the size of their farmland area. Farmers who work in a smaller area also considered their farm economically sustainable and able to develop in the future. The size of the farm did not seem relevant for the farms specializing in horticulture. In the case of horticultural crops and livestock farmers, the awareness that the present mode of farming was environmentally unsustainable was characteristic. For farmers engaged in arable crops, greening was a compulsory element to be utilized as extra revenue in their business.

To assumption that the young farmers in the Sand Dunes area possess the appropriate knowledge handed down through generations, I consider verified. The majority of the young farmers surveyed (112 owners) continue to build on the existing family farms. It was not prevalent among the interviewees that they would have started an entrepreneurship without family background and motivation. It can be said that they have the appropriate professional experience, practice and knowledge that is essential for successful management.

My research hypothesis, in which I assumed that future goals and the outlook of the farm were largely determined by the motivation of the young farmer was not verified. Only one of the farmers admitted that he only started to engage in agricultural activity due to the start-up support for young farmers. Farmers who have only begun to engage in agricultural activity due to the young farmers' subsidy, in my opinion, will be abandoning this field in the very near future. Investigating this hypothesis will require further research.

I refuted my assumption that farmers who started farming only a few years ago and are not from an agricultural family have a greater willingness to cooperate than those who inherited their agricultural knowledge through generations. It was not typical of farmers to have a greater willingness to cooperate even if they were attracted to this vocation due to their love of nature and agriculture.

My research hypothesis that **the ability of young farmers to access land is greatly influenced by the modification of the Land Act (Act CXXII of 2013 on the Agricultural and Forestry Land Acquisition) is verified.** As a result of the

increased land prices, young farmers with modest capital cannot expand their territory, even if an area of a certain size is available. In their opinion, the Land Act favors capital-strong, often older farmers (Table 4).

Table 4: Summary of the research hypotheses

Research hypothesis	With my research results the hypothesis was
(H1) For the young farmers of Homokhátság, it is not the size of the farm that primarily determines environmental and economic sustainability.	verified
(H2) Young farmers in the Homokhátság region possess the knowledge handed down through generations.	verified
(H3) Future goals, economic outlook and future prospects of the farm are largely influenced by the motivation of why the young farmer began to deal with agricultural activity. Farmers who have only begun to engage in agriculture because of the young farmers' tenders are, in my opinion, will be abandoning farming activity within a few years.	not verified
(H4) Farmers who have only been engaged in farming for a few years and are not from an agricultural family are showing a greater willingness to cooperate than those who inherited the knowledge through generations.	disproved
(H5) The ability of young farmers to own land is greatly affected by the amendment of the Land Act (Act CXXII of 2013 on Agricultural and Forestry Land Acquisition). The access of young farmers to land has become more limited.	verified

Source: own compilation, 2018.

3.7. New and novel scientific achievements

T1

I have shown correlation between the issue of economic sustainability and the supply of own machinery and assets. Primary research has demonstrated that the supply of adequate machinery and assets has a positive relationship with the issue of economic sustainability (development).

T2

I have shown that in the environmentally sensitive Homokhátság the most important problem is perceived to be not the question of aridification. Owners primarily identify labor shortage as the biggest risk that influences future management of their farms. Typically, the majority of farmers do not realize that the current way of farming is environmentally unsustainable.

T3

I have verified that greening, a requirement to receive area based subsidies - that is the pursuit of agricultural activities that are beneficial to the climate and the environment- is not intrinsically motivated but is merely a way of farming that owners undertake only in order to gain access to the subsidies.

T4

With scientific methodology, through cross-panel analysis, I have verified the earlier findings that in the examined area of the Sand Dunes the willingness to cooperate among young farmers is low. On the one hand, it does not help to improve the capacity utilization of farm assets and, on the other hand, it increases the risk of individual farmers.

T5

I have proved that young farmers' support has a positive impact on the pace of development of the farms, but it is typical that farmers who have over-extended themselves in the tenders have to pay back part of the aid received due to the sanctions.

This draws attention to the fact that the insufficiently thought-out but nevertheless successful tenders pose a high risk. Return on the subsidies is not guaranteed either to the applicants or to the national economy. At the same time, it can increase the number of collapsing ventures in rural areas, and the loss of income may further exacerbate migration, increase the aging population of the region, shift employment in a negative direction, and increase the size of agricultural land that is uncultivated.

T6

During the interviews, it was verified that the introduction of the new land act (Act CXXII of 2013 on agricultural- and forest land acquisition) led to an increase in land prices, and this is a disadvantage for younger farmers with less capital, only financially strong enterprises are able to expand their states.

T7

With the help of cluster analysis, I have demonstrated that in the question of economic sustainability, for one part of farmers, machine availability provides the means for financial sustainability, while in the other cluster it is the farm size that determines the issue of economic viability.

4. CONCLUSIONS AND SUGGESTIONS

The problem of aridification of the Homokhátság area was already present in the 1960s, behind which we can find economic, natural and social factors. There is a noticeable decrease in the groundwater level, which is due to lack of rainfall and poor agricultural practices.

The phenomenon of aridification implies that the livelihoods of those living here are also in danger and become more and more unpredictable. The competitiveness of the region is below the national average and if the process of aridification is not halted or slowed down, the depopulation of the region is expected to continue. In my opinion, the aging of agrarian society is even more serious in this area, surpassing the national and EU average.

Based on the above problem, I chose the Homokhátság as the area of my research and the young farmers living in the region who supposedly employ completely different way of farming than the agricultural practices used before the regime change. To reduce the problem of aridification, we need farmers who have appropriate theoretical and practical experience, who recognize its negative effects and manage and limit wasteful water consumption, and taking into account the specific problems of the area will develop a conscious production structure.

The young farmers surveyed at Homokhátság are characterized by the fact that agriculture plays a decisive role for them both in terms of total and additional income. It is typical of the respondents to have agricultural education while the number of farmers who rely solely on practical experience in agricultural production is not representative. The young farmers in the sample have a higher proportion of higher educational qualifications in agriculture compared to the national average. However, national data also show that young farmers have higher agricultural qualifications than older generations.

It is important to point out that for most of the young farmers in the examined area the motivating factor for starting agricultural activities was their affection, commitment and enthusiasm for agriculture.

It was an unexpected result that most of the growers were rather wary to transition to organic farming even though it is quite popular today. The labor demand for organic farming is greater than that of conventional farming, so moving from one to the other requires careful consideration.

Most of the farmers in the Sand Dunes region have their own land, but most of them are farming on smaller areas (13.37 ha on average). The region is characterized by the fact that the number of farms in the field of vegetable and outdoor horticultural crops is higher than the national average. Land leases are not typical of them, 67% of them do not have any rented area at all. Two-thirds of the farmers surveyed have been in direct contact with the new land act since

May 2014, which indicates that the statutory change in legislation has helped them to gain access to land. At the same time, the respondents felt that the land act actually had an adverse effect on the access of young farmers to land.

As a result of the increased land prices, which is also true of the sandy soils with poor productivity, farmers with less capital are still not able to gain access to land, they cannot increase the size of their farms. Another difficulty for them is that there is no land for sale in the area as it is typically already owned by richer farmers, so they cannot rent or buy even smaller areas.

Farmers are present in the area not only as self-employed entrepreneurs but also as employers, although they typically only retain seasonal labor. It is important to point out, that the work force employed is typically not from the neighborhood. The problem of labor shortage is noticeably heightened year by year, and it mainly hits the horticultural production and livestock farming with higher labor requirements. In some cases, this move farms in the direction of automatization, which will result in fewer farm labor demands, but requires higher professional qualifications and collaboration from farmers. In my opinion, the future prospects of farmers and the choice of species to grow can be greatly influenced by the appearance of automation.

As far as machine availability is concerned, it can be said that the respondents have an aging equipment park. In most farms, it would be necessary to upgrade or replace old machines that they have accessed either as an inheritance or through second-hand purchase. Most of the owners draw on their own resources or own resources and tenders to exchange machine and equipment parks, and the use of credit is not very popular among them. This reflects the future uncertainty inherent in agriculture (marketing difficulties, lack of workforce, survival of family farms, etc.).

Offering unnecessary machine capacity through pay-as-you-go service is not typical. There was no significant correlation between awareness of machine lending rings and the willingness to cooperate. There is a lack of willingness to cooperate among young farmers in the Sand Dunes region.

Produce and farm animals are sold by most farmers to wholesalers or traders. Farmers engaged in horticulture, foil and greenhouse cultivation are mostly selling their products on the Budapest wholesale market. Sales to BÉSZ and TÉSZ are not popular, and processing is also done only by a few growers. Not considering processing as a future prospect was also explained by labor shortage and marketing difficulties. Sales through associations are not typical of the interviewees, although the Kecskemét Satyor Community, a local initiative, could, in my opinion, be exemplary not just among the people involved in organic farming. These types of local sales can, together with short supply chains (RELS), serve the cause of localization.

The European Union has also set itself the goal of supporting young farmers, accelerating and encouraging generational change. It was typical of the owners who applied for the young farmers tender, that they over-extended themselves in the business plan for the sake of a successful tender, and rather paid a sanction later than losing the grant amount.

Area-based support was judged by the respondents to have greatly contributed to the financial viability of farming and, in some cases, compensated for losses. The expected decline in the level of subsidies will, in my opinion, have a negative effect on the willingness to manage farms, fewer young people will choose to pursue agriculture, further reducing the number of young farmers in the environmentally sensitive Sand Dunes region.

Farmstead development tenders were less popular among the surveyed farmers in the area, due to the fact that 84 farmers in the sampled 124 farms own a farmstead, but only 51 people actually live there.

The issue of environmental sustainability is particularly important for high-end horticultural crop production and livestock farmers. Overall, almost a quarter of the respondents (22.6%) think that their economy is not sustainable under the present mode of farming, at the same time 90% of the owners believe that they meet economic sustainability and development requirements.

There was a willingness to use renewable energy sources among the respondents (26.6%), but due to the lack of resources, most farmers are unable to invest in it. Expanding subsidies in this direction could give farmers the opportunity to use renewable energy sources.

The greening program (CAP) compulsory for farmers engaged in arable crop farming is considered a good initiative by many, however it is mainly the financial incentive that motivates farmers. In terms of greening, an impact assessment should be carried out because we know little about its current effects. (Partially maybe explained by the fact that for small farms and non-arable land farmers greening is not required).

The biggest problem facing farmers today is the lack of workforce, both skilled workers and day-laborers, which is why they use automation wherever possible. The cost of mechanization and robotization is burdensome even for larger economies, for which subsidies and, where appropriate, favorable credit alternatives - although not popular with farmers involved in the survey - could provide a solution. The unresolved problem of labor shortage can lead to the disappearance of additional farms, so it is an urgent task to solve especially in the most labor-intensive- horticultural and livestock farms. In addition to raw material production, further processing and thus the creation of added value may remain limited due to the existing and growing labor shortage.

To be able to defend against the wasteful and unlimited water usage environmentally conscious thinking and introduction of water-saving

technologies is needed. The farmers should be presented lectures and research results that draw attention to the problem of drying and the long-term consequences and negative impact that it will have on them. The taxation of illegally drilled wells in the backyard does not, in my opinion, solve an aggravated and increasingly perceptible problem.

Machine lending collaboration can be more effective if rules are laid down in a clarified legal framework such as how and in what proportion to bear the costs and damages of failure. In my opinion, however, the fact itself that a clarified legal framework became necessary draws attention to the loss and lack of trust.

Helping young farmers to access land should be a top priority given that due to the increased land prices, farmers with smaller capital cannot expand their territory.

Tenders for young farmers should offer a higher amount of support, with stricter controls, to those who already have existing practical experience. Increasing the amount of aid can help to buy land, increase and develop the equipment park and assets that are both important and determining factors in the economic sustainability of farms.

The future of horticultural crop production farms with high labor demand is doubtful, which may lead to a further decline in the number of individual farms. Manpower will be substituted, where it is feasible, with automation, but it is essential to have the farmers with the right professional and practical experience who are receptive to innovation.

The AGRYA proposal of 2018 "National Minimum for Agro-Generation Changes" includes the implementation of communication and guidance programs to restore the prestige of the industry, with which I fully agree. As an employee of agricultural higher education, in my experience, agriculture is partially so unpopular among young people because of its poor social perception.

However, I have to disagree with the proposal, also from experience, that wider application of dual training would increase the future labor force. In my opinion, this will only be achieved if the social perception of agriculture is improved. The number of students in agrarian higher education has been decreasing steadily in recent years and is characterized by students who are already working on family farms and are preparing to take them over, therefore, they will typically not take part in dual training.

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