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Sustainability and Agricultural Regeneration in Hungarian Agriculture

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Abstract: Generational renewal is a core issue in European agriculture. Despite the continuous efforts of governments and the EU Council, the ageing of farmers seems an unstoppable process, accompanied by land concentration, the decrease in agricultural activity and the transformation of the European countryside. Consequently, there is a very rich scientific literature analysing the problem; a great part of it argues that the young farmer problem consists, in fact, in a number of different problems, with these problems showing huge regional differences. Hungary, as a new member state, with a heterogeneous (both fragmented and concentrated) land-use structure offers a good field to analyse generational renewal. Our paper is based on the first results of an ongoing Horizon 2020 project analysing rural regeneration. As a part of the research study, 48 semi-structured interviews were conducted with young farmers, successors of farmers and new entrants into farming. In our paper, we explore how education, access to land and family traditions influenced generational renewal and how it impacts sustainability practices.

Keywords: generational renewal; sustainability; education; Hungary; access to land; farming traditions

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1. Introduction

It is clear, from publications on the world's food prospects, that young people's unwillingness to work in agriculture and large-scale exits from the sector appear to be accelerating and this is fundamentally contributing to the strategic challenges to be addressed in food regimes [1]. The world of working farms is also changing at a rapid pace. The traditional peasantry is permanently disappearing from the European countryside [2] and is being replaced by a variety of farmers, of which an EU research study lists ten types [3]. The comprehensive reports on sustainability and precision agriculture emphasize that, without supporting for generational renewal, the necessary restructuring of agriculture will not take place [4,5]. In Europe, 11% of farmers were under the age of 40 [6], the challenges of whom have rightly been highlighted by researchers [7–9].

The aging of the agricultural population is not typical in Hungary [10], but can also be considered common in developed economies. The exit of young people from agriculture has particularly detrimental consequences in regions of major importance for agricultural production [11]. In the 2000s, the proportion of Hungarian farmers under the age of 35 was estimated at around 20% and their utilized agricultural area was 12%. At the turn of the millennium, there were three times as many 65-year-old farmers as under-35 farmers. In 2010, this ratio rose to four and, in 2013, to nearly five. According to 2015 data, Hungary showed a similar picture to the EU, where the proportion of farmers under the age of 35 was

also low, at 6.1% [6]. The number of recipients of young farmer support payments increased from 10,031 in 2016 to 12,722, but the amount of the payment decreased slightly, which indicates that new entrants to the support system used a smaller area [12]. Table 1 shows the number of farmers aged between 15 and 39 (eligible for young farmers' support) and their share in the whole generation. Both indicators reflect a smaller increase in the number of younger farmers, which, in turn, does not fundamentally change the age structure of the agricultural population.

Table 1. The number of young farmers eligible for support in 2017 (thousand people, %).

	2013	2014	2015	2016	2017
Famers between 15 and 39 years (thousand people)	66.9	68.6	74.6	78.4	77.2
Proportion of total number of farmers (%)	3.7	3.7	4.0	4.2	4.2

Source: [12], calculation based on EUROSTAT.

The average area of land cultivated by young farmers exceeds the national average, yet the basic development goal is to increase the size of young people's holdings. Through public auctions conducted within the framework of the "Land for Farmers" program, every third farmer—about 30,000 farmers—acquired land ownership at market prices, including more than 1200 young farmers. The land could be purchased for almost double the average price of national arable land in 2015 [13]. Between 2015 and 2016, more than 1200 young people under the age of 40 became the owners of 50,000 hectares of land under the "Land for Farmers" government program [14].

The only organization established in Hungary specifically for the benefit of young agricultural entrepreneurs is the Hungarian Association of Young Farmers (AGRYA). The association was founded in 1996 and currently counts more than 3000 young farmers (in the 25–35-year age group). However, even young farmers over the age of 35 do not necessarily have to leave the organization. Through the "Senior College", farmers older than 35 years can still be a part of the life of the organization. The association has a program called the Second Wave, which was started for farm children and young adults between the ages of 18 and 25 who were not yet engaged in farming on their own.

2. Agricultural Restructuring in Hungary

In this part, we analyse how Hungarian agriculture changed in the last two decades, after the EU accession in 2004. The analysis is based on statistical data and on existing literature. Rural and agricultural restructuring are inseparable in the Hungarian context, and are influenced by the subsidy system of the Common Agricultural Policy [15–18]; the economic processes, namely, the increase in the food process and the lack of available free workforce; and the policy of the Hungarian government, which aims to redistribute land and favours large-scale arable crop farming [19].

A mixed farming structure (huge companies (sometimes former state farms and cooperatives); medium-sized, usually family-based, farms; and a lot of small-scale farms (part-time and subsistence farms)) characterizes Hungarian agriculture [20]. The profound transformation of agriculture started in the first half of the nineties, when the socialist-type cooperatives were transformed into private companies, new-type cooperatives, or went bankrupt [21], and was finished by the time of EU accession [22–24].

In Hungary, land ownership and land use are split. Despite land ownership, land use is less fragmented and the number of farms is continuously decreasing [19]. Statistics as well as data on farm subsidies show a rapid and continuous decrease in the number of farms. In 2010, the number of farms was 351,000, which dropped to 235,000 by 2020 [25]. In earlier papers, we have presented the decrease in the number of farms and subsistence farms; we have also shown that, especially in the case of smaller farms, it means a simplification of farming [26].

As a result of the decrease in the numbers of farm units, the data show a concentration of land use and land property [19,26]. The dominance of medium-sized and bigger estates,

the liberalization of the land market, the EU accession, the subsidies from the Common Agricultural Policy and the increasing investments into the sector resulted in the consolidation of agriculture. Of the 190,000 farms receiving EU support (SAPS), around 12,000 family farms and an additional 3000 companies dominate the Hungarian agricultural sector. The prices have risen and become stable. However, these processes had a negative effect on crop structure; monocultures are more wide-spread, cereal and maize production are the most common crops and animal husbandry is declining [27]. In addition, the entrance into farming became more difficult, as recent studies have shown [28].

In 2014, 0.8% of farms used one-third of the total arable land and 7.5% of farms cultivated 75% of the agricultural area [19]. Parallel to land concentration, agricultural employment decreased from around 1 million in 1988 to less than 350,000 in 2010 and only 20% of them were younger than 40 years old.

3. Theoretical Background

The literature on generational renewal is wide, even if we only concentrate on the most recent results of the studies analysing the case of Europe. Zagata and Sutherland [9], in their seminal paper, argued that the young farmer problem is not one problem, but a mixture of several, regionally different problems, also related to the differences among farm types, namely, the difference between farm successors and new entrants. The authors argued that countries with predominantly small farms are more likely to face the problem of aging of farmers, while countries with a less fragmented farm structure have more young sole-holders; they also emphasized that new member states are more frequently facing the problems of generational renewal.

Coopmans et al. [29], based on an EU research study, identified three conceptual phases and fourteen factors which help to understand farm generational renewal; the authors argued that generational renewal has a psychological element (successor identity, as it is called by the authors); an institutional element, called the farm succession process, comprising managerial, practical, legal and symbolic actions in order to transfer the farm; and, finally, they emphasized the necessity of farm development, i.e., the long process of changing the organizational structure and the strategy of the farm [29]. According to the authors, the phases of generational transfer are dependent on several external and internal factors. Using a sample of around 85 farms in several EU countries, the authors identified fourteen factors, grouped in four "spheres of influence", analysed in which phase the decisions are made and how the different factors influence the decisions of the farmers in generational renewal in the different phases [29]. The results of the comparative study show that agricultural policy has the main focus on increasing entry into farming. The authors argued that further research would be necessary to understand the role of Young Farmer Payment in farm succession.

Mann focused his investigation on a special group of farm successors, on the age group of 14–34-year-old farmers [30,31]. Based on a sample of Swiss farmers, he argued that female respondents tended to emphasize identity elements, such as continuing family traditions, or preference to work outdoors, while, among males, identity elements were more important at a younger age. Older male respondents took into consideration economic factors more often [30]. As several studies emphasized, in several cases, farm successors are hesitant as the income of farming is below the income of other economic activities. Mann argued that generational renewal is dependent on age [30]. Generational renewal is also dependent on retirement decisions, as Conway et al. emphasized [32]. They pointed to the necessity of encouraging early retirement to encourage intergenerational farm transfer.

According to an earlier research study conducted in Hungary in 2015 [33], 69.2% of the farmers, or a relative of the farmer, had farming traditions. The same study revealed that there is a relationship between farm size and farming family traditions; in the case of smaller farms, it is more likely that the farmer is from a farmer family, while, in the case of bigger farms, it is less likely.

The relevance of family traditions can be grasped in two facts; there are three main forms of acquiring the land owned and used by the farms, buying, inheriting and through restitution [33]. Buying is more typical in the case of farms using more than 100 hectares, inheritance is typical in farms below 20 hectares. According to the same study, the typical way to become a farmer is to start subsistence, then semi-subsistence farming and, after this preparatory phase, starting market-led farming activity [33].

If we analyse the source of agricultural knowledge, we see that a vast majority has acquired farming knowledge through everyday farming practices, specifically, 47.6% through everyday practices, whilst only 27.7% said that his or her knowledge stemmed from educational institutions. If we analyse the connection between the source of agricultural knowledge and family traditions in farming, we see that the role of learning from the practice is higher if there is a strong family tradition; it also means that there is a group of farmers which has a strong scholarly, professional agricultural knowledge, which can supplement family traditions.

In our paper, we use the most common definition of sustainability, which can be found in the Our Common Future report [34]; we understand it and its three dimensions as a platform idea [35], keeping in mind that it has a continuously changing understanding by the different actors.

We argue that focusing on a crucial point of generational renewal, on farm transmission, we could better understand the role of educational levels, family traditions and access to land in the process. We also would like to understand whether a move toward more sustainable practices can be detected among the members of the younger generation [10].

4. Methods and Research Questions

The main aim of the paper is to present agricultural regeneration in Hungary, its main motivators and to analyse how it influences the further development and spread of sustainable agricultural practices.

Based on the results of an ongoing Horizon 2020 research project (Ruralization: The opening of rural areas to renew rural generations, jobs and farms (GA 817642)), we aim to describe the patterns of farm succession on a sample of north-eastern Hungarian farmers, focusing on the momentum of farm transmission. We aimed at collecting the different patterns of farm succession and to understand the relationship among the factors influencing the decision of the farmers. We paid special attention to generational raptures or continuity and to the role of family traditions. We also involved, in the analysis, the role of education in agricultural renewal and the role of attitudes toward nature and toward working close to nature. By understanding these attitudes, we explore how sustainability appears in the narratives of the younger generation of farmers, how they understand it and how they translate it into their agricultural practices.

We conducted 48 semi-structured interviews [36] with young land successors and new entrants into farming under 40 years of age; these interviews constituted the basis of our analysis, but, as we show in the following sections, we used other interviews from three different research projects. There were no representative data on successors and new entrants into agriculture; therefore, we used snow-ball sampling to select our interviewees. The interviews covered a wide range of topics. We asked the interviewees about their family background, about their education and about their farms. We obtained detailed information about their farming practices, about their relationship with the previous owner of the farm and about their future plans. We used a context analysis to explore the role of family traditions, education, emotions and access to land in generational renewal and to understand the attitudes toward sustainability.

The site of the fieldwork was two counties in eastern Hungary, Hajdú-Bihar and Szabolcs-Szatmár-Bereg. In both counties, the proportion of the agricultural sector is traditionally high. Although industrialization has taken place since the mid-20th century, overall income was lower, while agricultural employment and income were significantly higher than the national average. In Hajdu-Bihar, the rural population lived more in small towns,

but the proportion of small villages was higher in the southern micro-regions. The rurality in Szabolcs-Szatmár-Bereg was the world of small villages, which was supplemented by the former market towns. The family farm was the most important form of agriculture in terms of numbers. Land use was segmented in Hajdú-Bihar; in addition to the strong concentration, there were also many smaller farms. High-quality arable land was dominated by crop production (maize and cereals). There were also larger estates in Szabolcs-Szatmár Bereg county, but there was a much higher proportion of small farms. The cereal production here was complemented by vegetable and, especially, fruit production. Animal husbandry tended to take place on large farms in both counties, while, in line with national trends, meat and egg production was slowly being pushed out of small farms. Our respondents were exclusively from family farms, inheriting a conventional medium-sized farm. Most of them had a BA or MA in agricultural engineering. Some of them worked together with other family members. There were only a few female respondents, mirroring that the rate of women among farmers less than 40 years old was only 26%.

As part of the fieldwork of the EU Ruralization project, 21 interviews were conducted with newcomers to the countryside, 11 of which were with farmers producing specialized products. During the research study on precision farming (TKP2020-KKK-04; implemented with the support provided from the National Research, Development and Innovation Fund of Hungary, financed under the 2020-4.1.1-TKP2020 funding scheme), 30 in-depth interviews were conducted with farmers and experts and, in the MILAB project (research study supported by the Ministry of Innovation and Technology NRDI Office within the framework of the Artificial Intelligence National Laboratory Program), another 30 in-depth interviews were conducted with precision farmers, a third of whom were young.

5. Factors Influencing Generational Renewal—The Empirical Results

The analysis of our extremely rich empirical material was organized around three main topics, developed using the theoretical background presented above. First, we analysed how family and traditions influenced young farmers' decisions on continuing or starting a farm business; secondly, we analysed access to land; then, we continued with the role of education in these decisions. We analysed the attitudes toward sustainability in the case of each topic.

5.1. Family

The family background (material, financial funds, knowledge capital and mental attachment) was crucial in the motivations of young farmers, although older generations did not always encourage entry into farming. Secondary and tertiary education, which is already a consequence of family social capital, was an additional motivator. Barriers to young people's access to employment and income and the continuation of family farming were the main external motivating factor. However, farming had high social value based on continuity, similar to the old EU Member States [37], despite the fact that, in Hungary, agriculture operated in a collectivized form between 1960 and 1990.

> "I gained professional knowledge from my grandfather and father and from experience. Because we also study at university, but what we experience at home is the real value" (male, 34; BA).

According to our interviewees, family was especially important in the decision of young farmers to continue or leave agriculture. Usually, family members supported them to continue farming. Family was also one of the main sources of knowledge; below, we present that, obviously, not all knowledge types used by them stemmed from family members. Family remained a reference point for young farmers and the role of family was discussed intensively when presenting labour division within the family. It is also very important to mention that family was not necessarily presented as an arena of idyllic and smooth collaboration; young farmers, almost in all cases, had to argue, sometimes contradict, even struggle with elder family members to follow the innovative agricultural methods, or to

modify farming strategies. In the following, we overview how family influenced farm generational renewal.

The support of the family to continue farming can be present in various ways and in various turning points of the lifecycle—in educational choices, as well as in moving back to the rural settlement after finishing university.

As an interviewee expressed,

> "I chose this occupation, because I have been always interested in what my father did, I planned to work with him later, after finishing the university. It was a common decision of the family and myself" (female, 35; MA).

However, it was also not rare that someone was following his or her grandparents in farming. The support of the family was important, as well as providing the necessary financial capital, land and management skills.

> "A friend of mine started farming as his father passed, so in a short time he sold the orchard, and simplified the farm, as he had no skills how to manage the workers, how to organize the farm; one cannot learn it in the school, he simply could not learn it from his parents, how it works" (male, 35; MA).

The family is also a source of knowledge; most frequently, two forms of knowledge stem from the family, knowledge about conventional agricultural practices, traditional agricultural knowledge (Reyes-Garcia 2014) and ecological knowledge [38]. The latter refers to knowledge about the ecological characteristics of a region, a sometimes underestimated source of knowledge in farming. Traditional agricultural knowledge still exists, but has less importance in the case of medium-sized farms. Knowledge about conventional agriculture practices was the most commonly used knowledge type by farmers in Hungary. Conventional agricultural practices and knowledge mean the modern methods of conventional agriculture. These methods became widespread in the 1970s and 1980s and were used by socialist-type cooperatives. These unsustainable practices mean high artificial nutrients and pesticide use and, usually, a simple crop structure. As we show in the following, the applied knowledge and practice was a source of conflict between the farmer and the heir.

> "My father hardly accepts, that we buy a new sowing machine, instead of using the old one; and after 2–3 years he also realized that now sowing costs less than 3–4 thousand forints (~EUR 10) for us, but if we would have to buy it as a service, it would be 12 thousand forints (EUR 45).
>
> But it is also difficult to explain that now after harvesting the sunflower, it is necessary to harrow the stems of the sunflower before ploughing. but I told him that he can say anything, I will do it, because it is not the same to work the half meter long pieces into the soil, or the smaller parts, so we mulched it, harrowed it, and then ploughed the plot; and it counts a lot"

It is very typical that young farmers have to work together with their parents:

> "To be honest, in this area there are almost no young people who would farm for himself, most of them farms together with his daddy. Here, life starts at around 30–35, then one can start independent farming, so I do not know a real young farmer, who would be in his or her twenties and would really work on his own, without any assistance" (male, 34; BA).

Family traditions can appear also as a constraint. The members of the younger generations had to continue the family farm, even if they had different aspirations; as a young farmer explained,

> "To be honest I did not want to work in agriculture at all. Thus in 1997 my father got a heart attack he sold a lot of arable land, 40 hectares, then I was really young, around 17 years old, I lived my disco ages. And the agriculture was completely different, nothing was like now, so when he asked me, whether I would like to work in agriculture I said, no, you can sell the land, but as my Dad was ill

someone had to continue farming, and then I could not avoid starting it . . . " (male, 41; MA).

There were also other constrains in inheriting family farming; these constrains appeared, often, as conflicts between the elder farmer, most frequently the father, and the heir, usually a son. The different conflicts can be understood as differences in farming methods, or the market position of the farm, but can be interpreted as differences in attitudes toward sustainability.

Obviously, there was a distribution of work in several cases, as the following quotation shows:

> "I would say, that I have good work relationship with my parents, we can negotiate about the duties, although there are certain things which both my father and I am doing, but certain tasks are waiting for me; I am responsible for the paper work around subsidies and projects, but all these stuff: keeping contact with the offices, institutions, land issues are my job, while everyday farming issues are solved by my father" (male, 34; MA).

The solution whereby paperwork and subsidies are handled by the heir was a widespread solution according to our interview results, while strategic planning, if not conducted together, and tasks around agricultural production were the responsibility of the elder members of the family. As another interviewee reported about the subsidies,

> "It must have been evolved this way, When we started in 2004 we could draw with hand on a piece of paper the areas we farmed, but since 2006 one has to provide a digital map, and I could do it, while for my father it would have been too difficult; he could have learnt it probably, but it was easier for me; so it developed this how" (male, 37; MA).

The beginnings of participation in family farming were motivated by the need to create one's own farm, but, in several cases, also by precarious job opportunities. Emergency decisions were also made.

> "*There were two options, one to sell everything and the other that I would take over the farm*" *(male, 32; BA).*

However, the full management of family work, from administrative tasks to independent decision making, was gradually transferred to the young farmer over several years.

> "*I used to work for my father, then with my father, and then later my father worked for me*" *(male, 28; BA).*

As a young farm successor said, farm transfer between generations was not always free of conflict.

Attitudes toward sustainability and sustainable practices seemed to be an important part of generational renewal and inheritance of farming. This is a topic in which the different knowledge forms used by the different family members may clash and the new farmer, the successor, can start building the farm according to his or her own ideas.

5.2. Access to Land

The state provides a maximum of 10 million (HUF) (around EUR 28,000) in the form of a tender for the purchase of land to young farmers, which is the price of 7–10 hectares of land and is not sufficient to start farming due to the tender restrictions. The purchase or lease of land is not supported in any other way by the state. Rather, it provides real support for those who need additional income to run their existing farm. Every year, 50,000–60,000 farms, mostly cultivating small areas, cease to exist in the Hungarian agricultural economy, but most of their land ends up in large estates. The privatization of the last vacant land began two years ago. Compared to 4.7 million hectares of cultivated land, the planting and ultimately privatization of 900,000 hectares of significant undivided jointly owned land is mandatory under state regulations, but the interviews showed that larger

owners are preferred. As Table 2 below shows, young farmers had little access to land for arable crop production, which is the dominant sector of Hungarian agriculture; instead, their share of land use in intensive fruit production was higher.

Table 2. Farmers' age and cultivation sector, 2020 (%).

Cultivation Sector	14–39 Years Old	40–64 Years Old	65 Years and Older	Total
lawn	12	65	23	100
fruit	15	60	25	100
grape	11	64	25	100
arable land	12	61	27	100

Scheme 2021. Agricultural census 2020, preliminary results.

The integration of new farmers was particularly effective when they started farming during their (university) education. *"It was very interesting to know if I understood much of what we were doing at home or if I could contribute."* In market towns and villages where farming had a tradition, a good farmer had considerable prestige. The choice of the agricultural profession was not forced by the family in any of the cases. It was the decision of the successors and new entrant farmers, typically arising from the desires and experiences of childhood, working outdoors and love of nature.

> "I've been there for animals since I was a kid, so I've been moving around them since I could walk. Closeness is not my world, I like to be outdoors, to work outside . . . I'm out in the open, in nature, I don't think I need a better office. I think one of the most beautiful things about working with a living being, be it a plant or an animal" (male, 42; MA).

A very common situation was the distance between the place of residence and the location of the farm, so dual life was not uncommon. The young farmer couple was often forced to choose to either live in a small town, which is the place of farming, but the spouse has to commute to work and the children to school every day, or to live in a larger settlement in the area, from where the farmer has to leave every day to keep an eye on the site and the crop. The choice of a two-person life for the comfort of the family was, primarily, a characteristic of those with higher education.

> " . . . It is a very close to nature, very small idyllic settlement anyway, so I really like to be outside., Just don't have to stay there, don't have to sleep there. It is very pleasant anyway, it is excellent for rest and refreshment, it is excellent for escaping from the big city" (male, 32; BA).

Difficulties in accessing arable land could also cause the farm to be further away from the family home, just as the subjective values of the farmer could lead to the spatial separation of residence and farm.

> "I have a duality because I like the relatively big city, if we can say about Debrecen, the urban lifestyle, with the advantage that there are more opportunities to spend after work, but I like to be outside, in the nature, while working" (male, 34; Ph.D.).

A version of a two-person life (especially when the distance between the farm and the place of residence is large) is when the farmer lives out on the farm during the year and typically only moves home in the winter when the seasonal work is completed.

Part-time farmers had different income expectations and saw part-time work as a kind of "safety margin".

> " . . . Because I work, I don't see it as a full-time job. So overall, I don't look at the cost like I'm living off of it either—but I still leave it as an alternative that if I can improve by then, of course I want to do it full time" (male, 37; MA).

In almost all cases, farming started with the privatization of land following the change in regime in 1990, with the acquisition of property by parents and grandparents, which was the basis of the current size of the estate. There were three motivators for this, i.e., (1) the attachment to farming as a way of life, mostly in possession of previous cooperative employment and expertise; (2) investment purposes, supplemented by additional land purchases; and (3) in the absence of other employment opportunities, this was a secure self-employment opportunity in a context of high unemployment. The land of young farmers was mostly a legacy from the land privatization of the 1990s, which the family increased with additional purchases, sometimes through marriage or other succession.

It is a characteristic process of inheritance that the young person first acquires experience in the farms run by the parents and, at the same time, obtains a secondary or higher education in agriculture, then builds relationships as an employee of a large-scale farm. Then, he/she undertakes to set up his/her own farming, which may initially be linked to the agricultural activity of the parents or siblings. The purchase of new land by young farmers is limited by high land prices and the competitive advantage of farms of hundreds or thousands of hectares. High concentration of land use is the main obstacle to new generations entering farming. It was less common for the entire land of the parental farm to be passed on to the successor even in the life of the parents.

The spouses of successful young farmers, typically, did not take up full-time employment. Even the farmer himself was, in many cases, not working part-time to run his own farm. He/she was typically employed by a larger agricultural organization and even ran their own farm (over 50 or 100 hectares) part-time. This often resulted in a division of agricultural work, land use, machinery use and even ownership, which severely limited the spread of promising practices that could be followed. Inheritance has also begun on large farms of hundreds or thousands of acres; here, access to land does not limit the success of the young farmer. However, this example is not available for the majority.

We could register a clear positive attitude towards sustainable agriculture in the emotional motivations of young farmers, but not in all cases. As we show below, the positive emotional disposition did not necessarily result in sustainable practices. The frequent mention of the natural environment as an attractive factor in farming, the high level of childhood experiences, environmental awareness and knowledge, and the theoretical and practical commitment to alternative forms of farming all appeared in the interviews. The idea of self-sufficiency and sustainability emerged as a special motive. It was reported that they wanted to test their ability to provide for themselves individually or at the family level using only the resources at their disposal, but in circumstances that did not cause significant harm to their children.

> "After getting into town, I longed for it after 5–6 years and was always looking for an opportunity to do a job that could be done in a small town. And so he became interested in this topic, the idea of self-sufficiency, to become a little independent of the system" (male, 29; BA).

In certain cases, sustainability appeared as an aspiration, but it was contradiction with the ideas of proper farming.

> *"The crops have to be free of weeds, I like if there are no weeds, and the plants grow uniformly"*, as a young educated successor explained (female, 33; MA).

The concentration of land ownership and land use was a strong barrier to the access of new generations to arable land, but this can be a structural driver of sustainable development. The response of young farmers to the land shortage was, in many cases, a complete or partial shift to intensive production and alternative forms of farming, as Csurgó et al. (2016) and Megyesi [24] also argued.

5.3. Education

In Hungary, the number of students in agricultural higher education is growing, with about 1200–1300 people graduating every year. Experience has shown that students already

have a high degree of career awareness in vocational education, with 2600–2700 students graduating each year. Statistics show that students whose families are engaged in farming on their own farm or where their parents have an agricultural background are more likely to remain in the sector. According to Kovách [19], one of the components of the structural change in Hungarian agriculture is the significant statistical correlation between the educational level of farmers and the size of the land used. Close to half (43%) of owners of farms over 200 acres have tertiary education. One-third of farmers overseeing between 100 and 200 hectares are graduates. Among farmers with over 100 hectares, there is virtually no primary education. The number of low-educated food producers is steadily declining and is relegated primarily to subsistence farms. The proportion of graduates in all farm size categories exceeds 21%. Slightly more than half of farmers have at least a high school education. According to the data of the Agricultural Census, the size of the arable land increases in direct proportion to the level of agricultural education for all age groups (Table 3).

Table 3. Agricultural education and average hectare of land in 2020.

Age Group (Years)	Agricultural Education	Hectares, Average
14–39	no	5.9
14–39	practical experience	8.3
14–39	basic level	20.3
14–39	medium level	31.8
14–39	high level	74.6
40–64	no	7.4
40–64	practical experience	9
40–64	basic level	21.9
40–64	medium level	38.5
40–64	high level	109
65 -	no	5
65 -	practical experience	7.7
65 -	basic level	15.8
65 -	medium level	31.1
65 -	high level	83.9

Source: [25] Agricultural Census 2020, preliminary results.

The majority of the interviewed young farmers had an agricultural degree, from a vocational high school diploma to a doctorate. Their age was between 22 and 37 years; they had typically 6–8 years of farming experience. However, this activity was already divided between full-time and part-time staff, the latter even being university lecturers. The advantage of higher education is the knowledge of the principle and technical possibilities of sustainable and extensive farming, the continuous strengthening of knowledge, network capital, project and application expertise.

An interviewee with three degrees in agricultural engineering, plant protection and phytology summarized the importance of the relationships as follows:

> "..and it feels good anyway, that when you get out of the university bench, everyone gets to work, gets here and there, and then in a few years, everyone, or mostly everyone, works in a profession. And then these former teammates run together within a work area, whether at events or whether one company is cooperating with another, or here, even if we think of the work of such area representatives, not necessarily working in extraction or at an acquiring company either. So, relationships are important, without which it wouldn't work. And that

> if everyone makes connections, the immersion is bigger, so I think that's essential to a successful and sustainable farming" (male, 37; BA).

Young farmers had knowledge of project management and related information, the source of which was a comprehensive vocational and higher education, which was also facilitated by a network that had been developed during the high-school and university years and had been later maintained and expanded.

> " . . . The university, however, formed a good foundation in this matter. From the point of view of education, from the point of view of the application, our application received an extra assessment in all respects, because . . . . . with a tertiary education, this was all positive in the field. . . . . So we won this, the decision was made at the end of 2012 and from then on we had to work as a sole proprietor and that is when we started our activity here" (male, 41; MA).

Young farmers, according to our interviews, had some knowledge about sustainable practices and distinguished among them. We found that organic farming was not at all attractive to our interviewees, who mainly inherited a conventional farm and, as we argued above, learned the modern agricultural practices of the 1970s and 1980s from their parents.

> "We don't practice organic farming, not even reduced pesticide use; although I know that it would be an advantage in projects; but it worth the effort only, if one can ask for a higher price for the product at the end of the day" (male, 32; BA).

Agri-environmental practices were more widespread than organic farming; some of the farmers had long and positive experiences with them and they continued sustainable practices, as the following quotation shows:

> "We have agri-environmental contracts since 2004, of course it changed a lot in the last almost twenty years, but we learned the basic rules and follow the changes. Fertilization is based on soil analysis, we modify the quantity of fertilizers according to it, we have a more diverse crop structure, including leguminous plants, and use manure as well, which is very important, I think" (male, 32; BA).

In these cases, the knowledge of management practices was of great help for the farmers; thus, they were capable of engaging in sustainable practices.

6. Discussion and Concluding Remarks—Sustainability and Generational Renewal

We analysed the role of family, access to land and education in farm generational renewal and its impact on sustainability. Our analysis focused mainly on farm transfer, on conflicts and cooperation around the transfer. We found that a relatively easier access to land facilitated generational renewal and, although the different educational back-ground may have resulted in conflicts, it was still a motivational factor. Similarly to the assumptions of Coopmans et al. [29], subsidies did not play an important role in the case of the analysed group of farmers. Our analysis is in line with Mann's findings [30,31], indicating that working outdoors is an important factor for generational renewal; however, economic rationality was not neglected by our respondents.

We found that family and the personal attachment to farming as a way of life was a crucial issue for the young farmers to continue farming. It was also a constrain, whereby at least one member of the family had to work on the farm. There were three issues which softened this constrain, namely, emotions (attachment to nature), economic reasons and the again increasing prestige of farming. As we demonstrate, working outside in open-air areas, close to nature, was an important and highly valued element of farming according to our interviewees. The processes of Hungarian agriculture of the last two decades also made this decision easier; thanks to the EU accession, the markets became more secure and CAP subsidies ensured the profitability of farming. Thus, continuing with farming is an economically rationale decision. In addition, as a result of these favourable processes, agriculture regained, at least partially, its prestige in rural areas.

Access to land was perhaps the most crucial point for farmers, as our analysis showed, something that other studies have also emphasized [39,40]. After the EU accession, land became the scarcest resource in agriculture [19].

As earlier representative studies have shown, the educational background of the farmers still stems from practice and only a bit more than one-fourth gained agricultural education in formal institutions (vocational schools or universities) [33]. At the same time, statistical data show that the higher formal education a farmer has, the larger the farm is. The educational background seems to influence the process of farm transfer; highly educated heirs seem to undertake conflicts about agriculture contracts more frequently.

As in other studies, in this one, we found that farmers did not consider the pursuit of innovative and sustainable precision agriculture to be age-dependent. It is widely believed that greater experience and a wide network of contacts are needed for successful practices in sustainable precision and organic farming [41]. Despite the international literature [42,43] which attaches fundamental importance to age in the spread of precision farming, Hungarian research has only partially confirmed this [44]. According to the empirical analysis, age played a role only as a secondary indicator of knowledge; however, knowledge, land quality and costs also determined the transition to innovative precision farming to a lesser extent than production and technical utility.

In the analysis, we focused more deeply on the role of notions and ideas of sustainability in farm generational renewal. According to our interviews, sustainability was an important issue for the farmers, but their understanding of the concept was different from the understanding of the literature. We analysed, in our interviews, how sustainability appeared in them and found that sustainability is linked to the following:

- Agricultural practice;
- Economics of farming;
- Natural environment and environmental protection.

Sustainability was understood, by the members of the younger farmer generation, as an agricultural practice. Most commonly, it meant a reduced pesticide, as well as a reduced artificial nutrient use. However, apart from this, sustainable agricultural practice had a highly diverse meaning. Sustainable practices were justified by economic reasons; either by sparing money on input materials or by the possibility to access subsidies (for example agri-environmental subsidies) by using sustainable methods.

Another common understanding of sustainability could be traced back to economic viability; farming incomes had to cover farming costs and profit should be maximised, while environmental externalities were usually not considered.

The third and perhaps most common understanding of sustainability was related to nature, to the natural environment, nature conservation, or sometimes to environmental protection. It was also mixed, in several cases, with unsustainable agricultural practices. As we showed, some of the farmers were emotionally attached to nature; it was also a reason for being a farmer and, as they also highly appreciated tidy plots, these were linked to each other—although it was clear that, without herbicide use, there are no clean plots. For them, sustainability meant the preserving of the landscape, the well-known natural environment.

Generational renewal opens up space for sustainability transition in all the analysed topics, but, by opening up space for the discussion about sustainability, it would be possible to make the links between more obvious these topics and to strengthen the emergence of sustainability practices. In this process, both policy and education could play a major role.

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