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HUMAN RESOURCES AS A FACTOR FOR THE SUSTAINABILITY IN BULGARIAN AGRICULTURAL HOLDINGS

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Abstract

All strategic documents related to the development of agriculture and its sustainable management in Bulgaria focus on the primary role of the human factor, with priorities aimed at stimulating generational renewal and transferring of experience and skills, leading to the success of agricultural holdings. However, the trend related to the advanced age of most agricultural producers and the lack of sufficiently educated and competent entrepreneurs to use the advantages of technology in agricultural production stands out as a problem. The aim of our research concerns the study and generalisation of main trends in this regard in Bulgarian agricultural holdings, emphasising the importance of several main factors for sustainability and their interrelationship, namely: family - non-family workforce, gender, age and education of farmers. The age and education of people working in agriculture are significant factors in the success and sustainability of the sector. By promoting education and training and bringing the next generation of agricultural entrepreneurs into the agricultural sector, agriculture ensures its continued success and growth. The combination of age and education also contributes to the development of specific skills and knowledge in agribusiness. Research methods used in the study include: general scientific research methods, summary and synthesis, logical method, tabular and graphical presentation of characteristics and trends. The analysis is based on empirical evidence – observation, interview, case studies from the practical activity of agricultural holdings and shared experience from producers. The results of the research can be systematised in several directions: influence of the family – non-family workforce factor on the management process; importance of the gender of the employed in the agricultural sector; age ratio and its benefits; awareness of the need for appropriate education and training of farmers. In conclusion, the summarised studies create an idea of trends in the Bulgarian agricultural sector regarding the importance of human factor and outline future directions for research in the field of human resources in modern agriculture.

Key words**:** *family and non-family workforce, gender, age, education and training, agricultural producers, agricultural holdings*

INTRODUCTION

In the field of economics, people are the determining factor that makes a business successful [21] and is the main driver for development [16]. Modern agriculture, as well as other significant sectors, create a real opportunity for business development and strengthening the local economy, and their importance for the environment is also key. Analyzing the importance of agricultural employment, as a major factor in agricultural efficiency, and the problem of population aging, as well as the need for technological progress and better management, are addressed in the scientific literature [17, 18].

The achievement of organisational goals depends on human experience, knowledge, skills, competences, level of education, motivation for improvement and sense of decision-making [19]. The management of human factor requires effort and an appropriate approach that focuses on the importance of human resources as the most significant asset determining the success of an agricultural organisation. Key factors for this success are *motivation* [21], which largely depends on whether there is continuity of management in the agricultural holding (family – non-family workforce), the gender of the employees in the sector (emotionality – rationality), the age of the farmers (the young-old relationship, as well as experience-

innovation and technology), and last but not least, the level of education (only practice or science and practice).

The choice between family and non-family workforce depends on the specific needs and goals of the agricultural organisation's activity. Both models, a family farm with a predominant family workforce or a farm with a predominance of non-family workforce, have their advantages and disadvantages and it depends on the farmer to determine which approach is best for the specific situation and opportunities.

The importance of gender of persons employed in agriculture also has its advantages, as women's participation in agriculture is critical to achieve sustainable development and promote gender equality globally.

The age distribution of the workforce in agricultural holdings is another factor determining the development with significance for the future of agricultural organisations. As older producers retire, there is a need for younger generations to enter the sector and ensure its sustainability. In addition, older people often bring valuable experience and knowledge and can help and advice younger agricultural entrepreneurs. It is necessary to encourage and support young people to enter the agricultural sector to ensure the continuity and sustainability of modern agriculture.

The development of the human factor also depends on another important point related to the changes and requirements of the contemporary dynamic environment, namely – continuous improvement of knowledge and skills through trainings [20, 21] and further training. Education and specialised training expand the scope of knowledge of agricultural producers, improve skills and competences, create a link between theory and practice, enhance the ability of human resources to apply modern ecological practices and techniques and make adequate and expedient decisions, which improves the management process, the entire cycle of agricultural activities, increases yields, improves efficiency.

(i)*The first factor for sustainability in agricultural holdings,* that we will highlight, *is the importance of a family – non-family workforce* and its impact on the efficiency and success of the agricultural organisation.

(ii)*The second factor for sustainability in agriculture in terms of people,* which we will focus on, is *the ratio of men to women employed in the agricultural sector.*

*(iii)*As *the third factor for sustainability in agricultural holdings*, we will consider *the age of human resources.*

*(iv)*As *the fourth factor for sustainability in agricultural holdings*, we will focus on *the importance of education and training of human resources.*

The combination of these factors creates conditions for implementing good ecological practices [11, 12] adopting innovations and technologies, expanding opportunities for different financing, combining practical experience with scientific achievements in the field of agriculture, balancing between emotional and rational management decisions, confirming generational renewal [20]. All this is important for the environmentally sound and sustainable development of agricultural holdings, which requires that ecological and economic interests are interdependent in the content of the ecological strategy, which is part of environmentally sound management [3].

In this context, the purpose of the research regards to study the human resources as factors for a sustainable development of agricultural holdings in Bulgaria, emphasising the importance of several main factors and their interrelationship, namely: family - non-family workforce, gender, age and education of farmers.

MATERIALS AND METHODS

The research methods used to study the significance of the human factor in achieving sustainability in agriculture include: general scientific research methods, surveys, discussion of case studies with examples from practice through interview, observation, review of scientific literature, summary and

synthesis of statistical data from official sources, logical method, graphical representation of characteristics and trends.
Surveys collect information on the age ratio and educational level of farmers, case studies examine the experiences of individual farmers and how their age and education have affected their farming practices, observational studies provide information for analysing the behaviour of farmers of different ages and the judgment of action in different climatic conditions. Through interviews with those employed in the agricultural sector, their experiences of farming practices are understood, including how age and education influenced their approach to farming. The literature review provides an opportunity to analyse existing research and new lines of reasoning about the impact of age and education on farming practices.
By combining these methods, researchers can gain a deeper understanding of how age, gender, family and non-family workforce, and education reinforce the influence and give a defining role to the human factor in modern agriculture.
The tasks of the research include highlighting the more important, in our opinion, factors related to the characteristics of human resources, which are a prerequisite for sustainability in agricultural holdings in the conditions of an economy transforming towards sustainability.
To achieve the formulated goal, the factors family and non-family workforce, gender, age, education and training of those employed in the agricultural sector and their role in increasing the efficiency and sustainability of modern agriculture are tracked and analysed.

RESULTS AND DISCUSSIONS

Human resource management is a multifaceted process of formulating goals, making decisions, taking actions. The effectiveness and efficiency of management process depends on a number of factors related to the organisation and its functioning. The main of these factors is undoubtedly human. Therefore, all efforts of the management should be aimed at stimulating motivation, opportunities for development, long-term management decisions, oriented towards constant improvement of the qualifications and competences of employees [21, 22].
The first factor for sustainability in agricultural holdings, that we will highlight in our research on human resources in agriculture, is ***the importance of a family – non-family workforce*** and its impact on the efficiency and success of the agricultural organisation.
Regarding the most important factor in agriculture – the human one, the data indicate an increase in ***the non-family workforce*** and a slight percentage decrease, but a definite preponderance in ***the family labour sector*** [4, 5] in agricultural holdings, namely: in 2020, there are 294,306 persons permanently employed in the agricultural sector, who put in a total of 168,043 annual work units (AWU). 13,841 AWU are invested by temporarily employed and indirectly employed contractors (Figure 1).

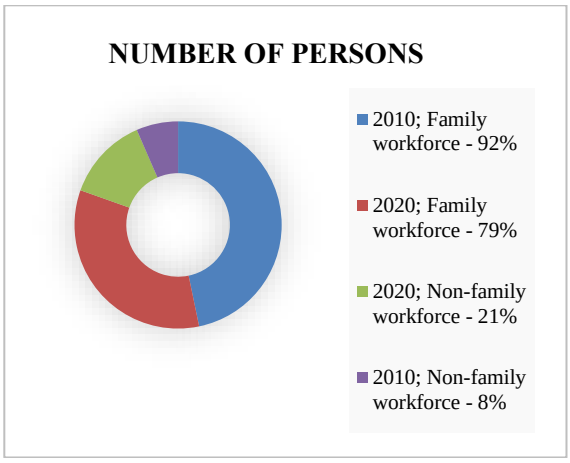

Fig. 1. Number of persons employed in agricultural sector
Source: Author's figure based on data from the Ministry of Agriculture, Agrostatistics [10].

A number of authors [6, 7] highlight the importance of ***the family workforce*** in family farms as a factor for sustainability and growth.
The significance of the labour force in agricultural holdings being family-based is that it creates a sense of belonging and community, commitment, cooperation and

shared responsibility. When family members manage and work together, interests and goals are shared, there is a high degree of trust and ethics in relationships, a sense of empathy for problems and pride in successes. In case of crisis situations, need for change or daily routine needs, the family workforce is more flexible and willing to accept new tasks or replace a family member as needed, without negative attitudes or feelings of unfairness. In the case of a preponderance of family workforce in the agricultural organisation, the management process is adaptive, and the decisions are adequate and timely. Family members can react quickly and act successfully when changes occur, replace or protect each other in times of need or emergencies. This quick reaction is especially valuable when unforeseen weather conditions, difficult-to-overcome natural factors related to yield and other external or internal obstacles to the company occur.

Another advantage of having a family workforce in agricultural holding is that the members willingly and eagerly pass on all their knowledge, encourage the development of skills, share experiences and carry on the succession with the younger generations, thus ensuring continuity and sustainability of the family firm over time. The family farming model has been proven to be a successful and sustainable approach to agricultural production.

Regarding the other trend of ***non-family workforce*** in agricultural holding, we can also highlight positive aspects in the management process and farming activities such as bringing: different opinion, different perspective on problem solving, specific skills, diverse perspectives on the production methods. In a generationally closed family business, non-family workers can contribute to success with fresh ideas, techniques and work knowledge and experience not known within the family. In addition, the employment of non-family workers provides opportunities for job creation and economic growth in rural areas.

The non-family workforce allows for seasonal hiring for larger-scale campaigns and agricultural activities. Also, some of the workers, outside the family that runs the agribusiness, may have knowledge in specialised activities or have undergone training in areas such as working with agricultural machinery, new machines and technologies, and bringing their experience to help the farm be more successful and profitable, and the management process – more sustainable.

The organisational environment in a non-family agricultural holding has specifically defined positions and duties, as well as expectations. Relationships are primarily formal, as opposed to informal ones between the members of family firm. This makes the management process more expedient and regulated, and the performance indicators more sustainable. The working environment is mostly professional, communication is tight, responsibilities are clear.

The choice between family and non-family workforce depends on the specific needs and goals of the agricultural organisation's activity. Both models have their advantages and disadvantages and it depends on the farmer to determine which approach is best for the specific situation and opportunities.

The second factor of sustainability in agricultural holding in terms of people, which we will focus on and which is of particular interest, is ***the ratio of men to women employed in the agricultural sector***.

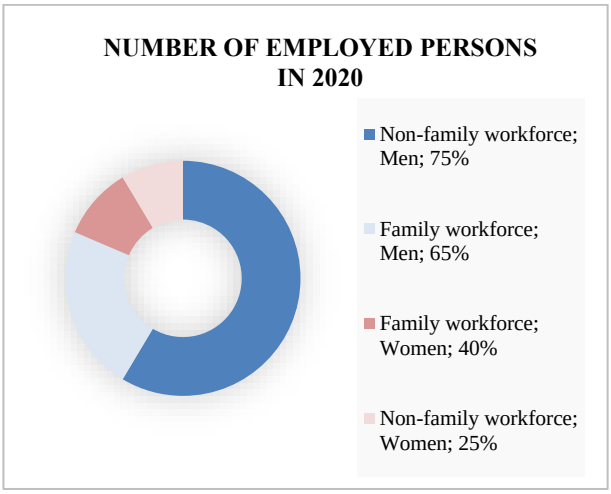

Fig. 2. Data on persons employed in the agricultural sector, 2020

Source: Author's figure based on data from the Ministry of Agriculture, Agrostatistics.

According to statistics disaggregated by ***gender*** of the employed human resources in agriculture, the data are as follows: 60% of those permanently employed as family workforce and 75% of those permanently employed as non-family workforce are men (Figure 2).

Research on the gender of agricultural workers is important because of the observed contemporary trend that, despite the historically entrenched tradition of male dominance in agriculture, today women make up a significant proportion of the agricultural workforce in many countries. This change is related to social and organisational development on a global scale and to the radical change in general in views, values and attitudes towards the place of women in all spheres of life in the world today. In terms of benefits, specifically in farming, the importance of gender and the entry of more and more women into the management and work of farms, this has the following positive aspects and benefits:

-women's participation in agricultural work provides them with income, improves their social status and empowers them to make decisions;

-women have experience and can be responsible for food production, processing and distribution;

-a problem in modern agriculture is the labour shortage and the participation of women can help to deal with this issue;

-elimination of the gender inequality, which prevails in the agrarian sector and can still be found in modern society;

-the participation of women in the work of agricultural holdings can contribute to the promotion of sustainable production practices by adopting more environmentally friendly farming methods, promoting crop diversification and reducing dependence on chemical fertilizers and pesticides.

-the higher degree of emotionality in women, in contrast to the prevailing rationality in men, is sometimes an advantage in making decisions related to the preservation of traditions, the spiritual appearance of rural areas, quick reaction in some crisis situations, changes related to the value system and others.

The importance of gender of the agricultural workforce is significant, as women's involvement in agriculture is crucial to achieve sustainable development and promote gender equality worldwide.

As a ***third factor for sustainability in agricultural holdings***, we will consider ***the age of human resources***. An interesting and indicative trend is the age ratio [9] of human resources in agriculture.24% of the permanently employed are aged 65 and over, 11% are under the age of 35 (Figure 3).

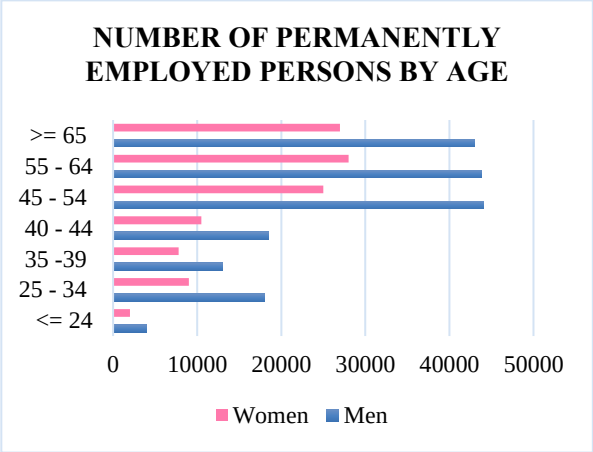

Fig. 3. Number of permanently employed persons in the agricultural sector by age

Source: Author's figure based on data from the Ministry of Agriculture, Agrostatistics [10].

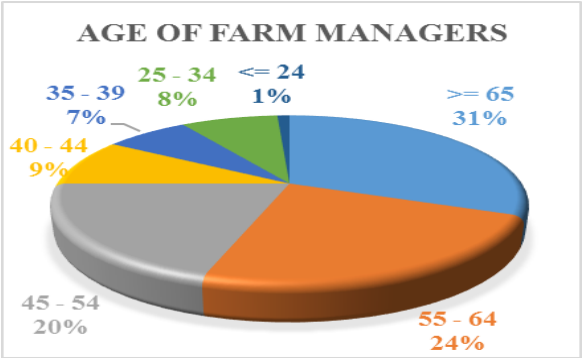

Fig. 4. Age of farm managers

Source: Author's figure based on data from the Ministry of Agriculture, Agrostatistics [10].

The tendency for the preponderance of male managers of agricultural holdings is still preserved – 95,645, although in recent years more and more women have taken risks and succeeded in the agricultural sector, showing managerial skills, leadership, knowledge and

preparation. After 2020, more than 28% are women farm managers and they invest 20,223 AWU in agriculture.

The statistics also show another persistent trend regarding the age – 31% of managers are 65 and over, although the entry of younger management personnel is rising slowly but positively (Figure 4).

The age of human resources in agricultural holdings is an important factor in modern agriculture because:

-older producers need to transfer their knowledge, skills and experience to younger ones to ensure ***continuity*** and sustainability of farming operations;

-younger agricultural entrepreneurs are often more willing to adopt ***new technologies and innovative farming methods***, which helps increase productivity, reduce costs and promote sustainability in agriculture. The scientific literature [16] emphasises the importance of technologies in agriculture which young farmers are familiar with.

-the age of farmers also affects ***productivity***, as younger human resources working in the sector have more energy and physical stamina to cope with the requirements of work;

-the age of human resources in agricultural holdings is also important for the ***development of rural areas*** [13, 14, 15], since younger producers with their activity contribute to the economic development of rural areas [2] by creating job opportunities, increasing income and promoting social and cultural activities [8]. The listed main reasons give rise to draw the following conclusion: it is necessary to encourage and support young people to enter the agricultural sector in order to ensure the continuity and sustainability of modern agriculture.

The summarised data from the reasoning and conclusions made are presented in Table 1.

Table 1. Data related to the age of the human factor in agricultural holdings

AGE GROUPS (YEARS)												STATISTICAL REGIONS AND DISTRICTS
<= 24		25 - 34		35 -44		45 - 54		55 -64		>= 65		
Persons	AWU	Persons	AWU	Persons	AWU	Persons	AWU	Persons	AWU	Persons	AWU	
1,599	**931**	**10,945**	**6,307**	**20,636**	**12,950**	**27,296**	**17,088**	**31,948**	**18,833**	**40,918**	**21,140**	**BULGARIA**
218	***131***	***1,211***	***772***	***2,239***	***1,568***	***3,070***	***2,094***	***3,287***	***2,084***	***5,203***	***2,951***	***Severozapaden***
32	17	148	78	354	197	441	244	464	227	1,146	466	Vidin
47	30	304	203	515	381	706	534	688	486	1,037	718	Vratsa
41	24	196	125	339	230	432	291	505	312	881	469	Lovech
49	27	241	157	411	280	632	427	707	460	1,036	627	Montana
49	33	322	209	620	422	859	598	923	600	1,103	672	Pleven
223	***125***	***1,269***	***778***	***2,508***	***1,633***	***3,507***	***2,318***	***3,471***	***2,262***	***3,905***	***2,270***	***Severentsentralen***
47	29	279	174	606	427	757	543	771	525	1,032	525	VelikoTarnovo
22	8	112	57	232	119	222	116	284	157	478	225	Gabrovo
42	27	259	188	517	388	796	602	822	622	799	618	Razgrad
43	24	277	162	513	309	693	438	648	409	771	466	Ruse
69	37	342	197	640	389	1,039	619	946	550	825	435	Silistra
195	***113***	***1,385***	***834***	***2,800***	***1,730***	***3,767***	***2,413***	***3,876***	***2,395***	***4,328***	***2,237***	***Severoiztochen***
43	21	232	131	501	312	688	416	677	390	989	493	Varna
54	28	549	310	1,072	647	1,298	828	1,144	715	1,260	650	Dobrich
47	34	232	161	533	372	760	535	947	627	1,048	648	Targovishte
51	31	372	232	694	398	1,021	634	1,108	664	1,031	447	Shumen
279	***154***	***1,701***	***977***	***3,485***	***2,194***	***3,868***	***2,511***	***4,083***	***2,497***	***4,939***	***2,662***	***Yugoiztochen***
107	64	551	342	1,223	808	1,333	893	1,470	948	1,675	957	Burgas
72	37	443	238	861	504	919	536	944	478	1,233	511	Sliven
64	35	402	235	877	566	956	668	846	588	999	697	Stara Zagora
36	17	305	162	524	316	660	414	823	483	1,032	497	Yambol
276	***175***	***1,938***	***1,285***	***3,662***	***2,368***	***4,921***	***3,130***	***6,055***	***3,762***	***8,334***	***4,826***	***Yugozapaden***

Source: Ministry of Agriculture, Agrostatistics [10].

It can be summarised that the age distribution of the workforce in agricultural holdings has an essential importance for the future of agricultural organisations. As older producers retire, there is a need for younger generations to enter the sector and ensure its sustainability. Furthermore, older people often bring valuable experience and knowledge and can help and advice younger agricultural entrepreneurs.

As ***the fourth factor for sustainability in agricultural holdings from the perspective of the human factor***, we will emphasise on *the importance of* ***education and training*** *of human resources*. Education and passing through specialised training expands the scope of knowledge of agricultural producers,

improves skills and competences, creates a link between theory and practice, improves the ability of human resources to apply modern ecological practices and techniques and make adequate and expedient decisions, which improves the management process, the entire cycle of agricultural activities, increases yields, improves efficiency. Through appropriate education, producers acquire the necessary knowledge to protect the environment. An important advantage of educated farmers is awareness and use of new technologies and innovations to improve productivity and profitability. In addition, the educated farmer is well informed and familiar with financing opportunities [1] and inclusion in various support programmes.

We can present the summary results related to the trends regarding the practical ***experience, training and education of the human factor*** in management in Tables 2 and 3.

Table 2. Data on the experience, training and education of the human factor in management

Statistical regions and districts	Total	Only practical agricultural experience	Basic agricultural training (a course in agriculture with a minimum of 150 hours)	High-school specialization in agricultural training	University degree in agriculture
Bulgaria	**132,742**	**110,284**	**9,995**	**7,961**	**3,962**
Severozapaden	***15,228***	***12,608***	***1,330***	***868***	***422***
Vidin	2,585	2,174	118	233	60
Vratsa	3,297	2,725	352	161	59
Lovech	2,394	1,992	238	95	69
Montana	3,076	2,667	204	128	77
Pleven	3,876	3,050	418	251	157
Severentsentralen	***14,883***	***10,880***	***1,506***	***1,704***	***793***
VelikoTarnovo	3,492	2,679	349	272	192
Gabrovo	1,350	1,112	132	55	51
Razgrad	3,235	2,480	144	488	123
Ruse	2,945	1,867	473	356	249
Silistra	3,861	2,742	408	533	178
Severoiztochen	***16,351***	***12,819***	***1,193***	***1,600***	***739***
Varna	3,130	2,386	297	340	107
Dobrich	5,377	2,876	482	626	393
Targovishte	3,567	2,958	161	337	111
Shumen	4,277	3,599	233	297	128
Yugoiztochen	***18,335***	***14,273***	***1,833***	***1,435***	***814***
Burgas	6,359	4,750	797	588	224
Sliven	4,472	3,814	307	230	121
Stara Zagora	4,144	3,213	405	248	278
Yambol	3,380	2,496	324	369	191
Yugozapaden	***25,186***	***22,285***	***1,700***	***951***	***250***
Blagoevgrad	13,569	12,416	716	379	58
Kyustendil	4,218	3,576	389	208	45
Pernik	2,000	1,738	127	102	33
Sofia-grad	656	571	55	13	17
Sofia-oblast	4,743	3,984	411	249	97
Yuzhen tsentralen	***42,739***	***37,959***	***2,433***	***1,403***	***944***
Kardzhali	8,705	8,394	228	62	21

Source: Ministry of Agriculture, Agrostatistics [10].

Table 3. Number of persons and average work unit in Bulgaria by region and district

Number of persons and average work unit in Bulgaria by region and district						
Statistical regions and districts	Total		Sex			
			Men		Women	
	Persons	AWU	Persons	AWU	Persons	AWU
Bulgaria	132,742	77,249	95 645	57,026	37,097	20,223
Severozapaden	15,228	9,540	11 423	7,353	3,805	2,187
Vidin	2,585	1,228	1,886	921	699	307

Vratsa	3,297	2,351	2,502	1,834	795	517
Lovech	2,394	1,450	1,780	1,105	614	344
Montana	3,076	1,978	2,303	1,523	773	455
Pleven	3,876	2,533	2,952	1,969	924	564
Severentsentralen	14,883	9,386	11,241	7,230	3,642	2,156
VelikoTarnovo	3,492	2,223	2,669	1,736	823	487
Gabrovo	1,350	681	1,005	519	345	163
Razgrad	3,235	2,445	2,508	1,908	727	538
Ruse	2,945	1,808	2,268	1,424	677	384
Silistra	3,861	2,228	2,791	1,643	1,070	585
Severoiztochen	16,351	9,723	12,001	7,284	4,350	2,439
Varna	3,130	1,762	2,356	1,365	774	397
Dobrich	5,377	3,177	4,081	2,481	1,296	696
Targovishte	3,567	2,377	2,574	1,723	993	654
Shumen	4,277	2,407	2,990	1,715	1,287	692
Yugoiztochen	18,355	10,995	13,092	8,080	5,263	2,915
Burgas	6,359	4,013	4,660	2,997	1,699	1,016
Sliven	4,472	2,304	3,013	1 623	1,459	680
Stara Zagora	4,144	2,789	2,952	2,035	1,192	754
Yambol	3,380	1,889	2,467	1,425	913	464
Yugoiztochen	25,186	15,546	18,161	11,398	7,025	4,148
Blagoevgrad	13,569	8,511	9,867	6,193	3,702	2,318
Kyustendil	4,218	2,235	2,918	1,590	1,300	645
Pernik	2,000	1,322	1,410	972	590	351
Sofia-grad	656	472	481	359	175	113
Sofia-oblast	4,743	3,006	3,485	2,285	1,258	721
Yuzhen tsentralen	42,739	22,058	29,727	15,680	13,012	6,379
Kardzhali	8,705	4,863	5 568	3,073	3,137	1,789
Pazardzhik	8,989	4,402	6,836	3,386	2,153	1,017
Plovdiv	10,897	7,003	9,719	5,261	2,980	1,772
Smolyan	6,204	1,748	4,158	1,173	2,046	575
Haskovo	7,944	4,043	5,248	2,816	2,696	1,226

Source: Ministry of Agriculture, Agrostatistics [10].

The statistics [10] show that the producers from the Pleven District – 3,050 – are the ones with mostly more practical experience, and the same district is the leader in terms of training and education indicators –with basic agricultural training – 418, with secondary vocational agricultural education – 251 and with higher agricultural education – 157. People with higher education are fewer than people with secondary vocational agricultural education, and this trend clearly highlights the need to encourage farmers to increase their competence. In the other regions, the trend is the same: in the North Central (Severen Tsentralen) Region, Ruse District leads with the most higher education graduates – 249, followed by VelikoTarnovo District– 192, and Gabrovo District with the least –51. The Northeast (Severoiztochen) Region and Southeast (Yugoiztochen) Region maintain the tendency for the preponderance of people in the agricultural sector with basic agricultural training and secondary vocational agricultural education, and the data for the Dobrich District, as the most traditional area related to agricultural activity, are as follows: basic agricultural training – 482, secondary vocational agricultural education – 623, higher agricultural education – 393.In the Southwest (Yugozapaden) and South-Central (Yuzhen Tsentralen) Regions, the data clearly indicate the presence of the largest number of farmers with basic agricultural training and secondary vocational agricultural education, with only 97 farmers in the Sofia District, therefore the trend from the other regions is again maintained.

The data in the table [10] related to the education and training of agricultural producers by regions and districts in the Republic of Bulgaria show that people with practical experience, with basic agricultural

training or with secondary vocational agricultural education have a significant advantage over people with higher education. Following the statistics by regions and districts, with a higher percentage ratio are agricultural entrepreneurs who do not have a higher education, which has its impact on the success of agricultural science and practice. This finding confirms the need for the thesis advocated by us to emphasise the need for more educated and competent agricultural producers. This factor for the sustainability is clearly linked to the other factor we have considered – age. The preponderance of practical experience over specialised scientific training is tied to the preponderance of older producers over younger agricultural entrepreneurs. This trend and interrelationship between the factors age – education strengthens the direction of development in modern agriculture, namely – stimulation and motivation with all ways and methods for the entry of young trained personnel into the agrarian sector, which will guarantee its sustainability and development towards innovation, digitalisation, ecological management combined with experience and skills passed down through generations.

We can summarise that the training and education of people working in agriculture, as well as the importance of gender and the entry of more and more women into agriculture as the trend of male predominance, according to the indicated statistics, is beginning to change and play an important role in its development and sustainability.

The combination of age and education contributes to the development of specific skills and knowledge in agribusiness by passing on valuable experience of traditional farming practices from the elders, while the younger ones are more familiar with new technologies and innovations, which balances skills and makes farming more efficient and productive.

CONCLUSIONS

Findings from the study on the influence of *age and education on the human factor* in agriculture can provide valuable insight into the practices and behaviour of farmers:

-Older farmers have more experience and traditional knowledge in agriculture and rely more on traditional methods, so they are less likely to adopt new technologies or sustainable farming practices, while younger farmers are more innovative and open to the digitalisation of the transforming to sustainability economy. The analysis carried out by the *age* factor found statistically predominant older producers, but with a definite increase in the tendency for young entrepreneurs to enter the agrarian sector.

-Education and training play an important role in modern agriculture, as agribusiness requires a thorough understanding of the science of agriculture, including soil science, crop and animal production. In addition, education can help farmers keep pace with the latest technologies and practices and make informed decisions about managing their operations.

Entrepreneurs with a higher level of education are more likely to adopt sustainable farming practices, while older farmers are more resistant to change. The study of the *education* factor shows that in Bulgaria there is a tendency for people with basic agricultural training or with secondary vocational agricultural education to prevail over people with higher education, which confirms the need to increase the educational level of agricultural producers.

The influence of age and education on farming practices varies according to the specific context and culture of the farming community under study. Therefore, it is important to interpret the results of each study carefully and take into account the unique characteristics of the Bulgarian farms studied.

The age and education of people working in agriculture are significant factors in the success and sustainability of the sector.

By encouraging the education and training of the next generation of agricultural entrepreneurs to enter the agricultural sector, agriculture ensures its steady success and growth.

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