



Animal Production, Resource Engagement and Sustainability of Return

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

In recent years, the topic of sustainability of return has been topical. A significant number, if not the vast majority, are in fact returnees to rural areas in the wider area of Bosnia and Herzegovina. There are many objective reasons why this is so, but in this paper we will deal with the perspectives of sustainable return on the example of the region "Srednje Podrinje". Animal production imposes itself as the simplest form of production in order to engage existing resources owned by returnees, primarily land. However, one of the problems faced by the inhabitants of rural areas is the lack of knowledge about the markets for agricultural products, in connection with their chances but also threats.

Keywords: Returnees; rural areas; sustainable return; animal production.

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1. INTRODUCTION

Due to its specifics, agricultural and thus animal production differs significantly from other economic branches. Its specifics are reflected in:

a) the connection of the process to the natural environment and restoring returnee environments, especially in rural areas, has been an investment agricultural funds are one of the ways to create new jobs in the countryside and stabilize rural communities, which were re-established after the war (1992-1995) [1], and trade in animals, despite the significant predominance of trade in objects and services of modern technologies is still commercial interesting activity [2]. In support of this are estimates according to which only among EU member states during the year they transport about 25 million cattle, 6 million cattle, 171 million pigs, 75 million sheep, and about 9 million goats [3]. Animal production must renew its fundamental role concerning land-natural resources, as well as its function between man and the biosphere, which is primarily related to the environment, and includes the optimal number of animals per unit area [4]. The natural environment in a rural area can be experienced as a "house" and not as an "occupied source", i.e. life in the natural order in rural areas is ahead of life oriented to the rigid market laws [5]. Following the example of other developed countries of the world such as France and Germany, develop modern, extensive and ecological livestock breeding and produce top quality meat and milk raised in a completely natural way as well as the development of rural tourism (author suggestion). The model of mixed economy is not only a transient phenomenon in the earlier period, but a more permanent form of organization of family agriculture which today faces new challenges of modernization, production and environmental risks, market globalization and labor crisis [6]. Economic, social and cultural progress of an area and the community living in that area, including the preservation and improvement of the natural environment. This development is not based on maximizing success (production, income, profit) but on the optimization of all natural created and human resources which can be reduced to the concept and in the framework of "sustainable development". It is based on the optimization of all components of rural areas [7].

2. MATERIALS AND METHOD OF WORK

The sample consisted of 325 returnees to the Republika Srpska entity, the Central Podrinje region (Zvornik, Milići, Vlasenica, Bratunac and Srebrenica). There were 183 (56.3%) males and 142 (43.7%) females. The majority of returnees (75.7%) were from rural areas. The number of returnees, distributed in periods of 10 years, were mainly 21 to 50 years old (64%), the age of greatest working capacity, and 25.5% were 41-50 years of age. From 51 to 60 years, there were a total of 59 (18.2%) and >60 years were 55 (16.9%) returnees. Most returnees had a high school diploma (180 or 55.4%) and 27.7% had completed primary school education. About 10% of returnees had a university degree and completed a master's degree.

The questionnaire on the research of providing conditions for sustainable return was used in the research. The questionnaire consists of 11 questions that determine the sample of respondents, and it is consisted of 11 statements - indicators of respondents attitudes. Based on the allegations, the attitudes of returnees on providing conditions for sustainable return were assessed. Respondents were offered answers to the statements on a seven-point Likert-type scale (I completely disagree, disagree, somewhat disagree, neither agree nor disagree, somewhat agree, agree, completely agree) of which they chose one. The results that represent the answer for each individual statement were summarized after the research and the total value for each respondent was obtained. From these total values, called the variable "sustainability of return", a unique statistical law was formed, which was used to determine the differences in responses with regard to gender, age and educational status of returnees in addition, to determine the differences between these groups and their individual claims. Answers to questionnaire were: I agree, answers neither agree nor disagree or undecided, also answer disagree. Data were processed by descriptive analysis, frequencies and percentages were calculated. Due to the decision to conduct tests for data processing, Kolmogor's Test for assessing the normality of the distribution was applied, Mann-Whitney, U-test, Kruskal Wallis test and chi-square test.

Table 1. Distribution of returnees' responses to set claims

	completely disagree	Disagree	Partially disagree	Nor agree, nor disagree	Partially agree	Agree	Completely agree
An effort has been made by the entities to restore the living space of returnees	131(40.3)	146(44.9)	11(3.4)	5(1.5)	18(5.5)	5(1.5)	9(2.8)
Damage to the property can be compensated	177(54.5)	51(15.7)	27(8.3)	11(3.4)	19(5.8)	20(6.2)	20(6.2)
Destroyed or missing systems of functioning of the economy have not been restored in returnee places	13(4.0)	22(6.8)	20(6.2)	8(2.5)	21(6.5)	50(15.4)	191(58.8)
Destroyed or missing systems of functioning of the economy have been restored in places of no return	19 (5.8)	52(16.0)	20(6.2)	31(9.5)	121(37.2)	38(11.7)	44 (13.5)
Most cooperatives, agro-industrial complexes have not stopped working	132(40.6)	34(10.5)	57(17.5)	17(5.2)	24(7.4)	18(5.5)	43(13.2)
Agricultural product placement channels accept our products	44(13.5)	66(20.3)	122(37.5)	22(6.8)	25(7.7)	27(8.3)	19(5.8)
Significant funds have been invested in the reconstruction of returnee communities in rural areas	43(13.2)	62(19.1)	46(14.2)	31(9.5)	101(31.1)	24(7.4)	18(5.5)
Assistance programs for returnees from foreign governmental and non-governmental organizations have been reduced almost completely	31(9.5)	16(4.9)	49(15.1)	40(12.3)	88(27.1)	36(11.1)	65(20.0)
Returnees find it harder to find work than others	15(4.6)	111(34.2)	45(13.8)	16(4.9)	10(3.1)	24(7.4)	104(32.0)
The current level of agricultural land cultivation can provide enough income for a normal family life	33(10,2)	114(35,1)	53(16,3)	23(7,1)	20(6,2)	31(9,5)	51(15,7)
Animal production is optimal for the engagement of resources and the existing labor force.	14(4.3)	115(35.4)	57(17.5)	20(6.2)	32(9.8)	30(9.2)	57(17.5)

Results of Mann-Whitney U test, Kruskal-Wallis H test and chi-square difference test

3. RESULTS AND DISCUSSION

Distribution of returnees' responses to set claims

Table 1 presents the results of respondents' responses to claims regarding the provision of conditions for sustainable return. Insight into the frequency distribution and response rates of returnees showed that the majority of returnees do not agree with the statement "an effort has been made by the entities to renovate the area where I live as a returnee." 44.9% disagree with this statement, 40.3% completely disagree and 3.4% returnees strongly disagree. Also, most returnees do not agree with the statement "On my property is during 1992-1995 the damage that can be compensated" of a total of 78.5%, 54.5% completely disagree, 15.7% disagree and to some extent disagree 8.3% returnees. The majority of returnees 80.7% agree with the statement "Destroyed or missing organizational systems of the functioning of the economy and the market during 1992-1995 have not been restored to this day." 58.8% fully agree, 15.4% agree and 6.5% returnees or somewhat agree. Contrary to the answers to the previous statement, the majority of returnees 62.4% confirms "Destroyed or disappeared organizational systems of the economy and markets during 1992-1995 were restored in other areas where there was no significant number of returnees." That is, 37.2% of returnees completely agree with this statement. Based on these answers, discrimination of the returnee population can be sensed when it comes to creating a business environment and employment. Looking at the results, it is noticed that the majority of returnees 68.6% do not agree with the statement "Most cooperatives, agricultural and industrial complexes did not stop working after the period 1992-1995", 40.6 % completely disagree, 10.5% disagree and 17.5% somewhat disagree with this statement. Likewise, the majority of returnees 71.3% in total do not agree with the statement "Agricultural product placement channels accept our products in the same way as during the period 1992-1995". 37.5% disagree with this statement, 20.3% disagree and 13.5% returnees completely disagree. It can be noticed that there is an approximately equal representation of returnees' responses to the statement "significant funds have been invested in the reconstruction of returnee communities in rural areas", with a slightly higher overall percentage of disagreements. 46.5% disagreed with the statement, and 44.0% of returnees agreed. The

largest number of respondents answered that they somewhat agree with this statement 31.1%. The majority of returnees 58.2% in total agree with the statement "Returnee assistance programs from foreign governmental and non-governmental organizations have been reduced almost completely." 27.1% of returnees fully agree with this statement, while the majority of 52.6% in total disagree with by claiming "Returnees find it harder to find work than others". Most of them disagree with this statement 34.2%, then somewhat disagree 13.8% and completely disagree with 4.6% "returnees, but also a significant percentage of the total 42.5% agree with her. It can be noticed that the majority of returnees 61.6% in total do not agree with the statement "The current level of agricultural land cultivation can provide enough income for a normal family life". 35.1% disagree with the statement, 16.3% disagree to some extent and 10.2% returnees completely disagree. Also, the majority 57.2% in total does not agree with the statement "Animal production is optimal for the engagement of resources and the existing workforce." 35.4% disagree with the statement, 17.5% disagree to some extent and 4.3% returnees completely disagree.

In order to gain a better insight into the attitudes of returnees on the sustainability of return, the differences of summarized responses to all the statements made in relation to gender, age and educational status of the respondents were tested.

When comparing the results of the survey of attitudes towards the sustainability of return in relation to gender, no statistically significant difference in mean ranks was found between male and female respondents ($U = 12988.00$; $Z = -0.01$; $p = 0.99$) (Table 2).

Applying the Kruskal-Wallis H test when comparing the results of the survey of attitudes to the established claims about the sustainability of return in relation to the age of returnees (six groups of respondents) revealed a statistically significant difference ($\chi^2 = 34.17$ $df = 5$; $p = 0.00$) (Table 3).

Subsequent comparison, using the Mann-Witney U test, confirmed that there is a statistically significant difference in responses between groups in most combinations, ($p < 0.05$), except between groups aged 31 to 40 years and 41 to 50 years, from 31 to 40 years and from 51 to 60 years, and the group from 51 to 60 years and

over 60 years (Table 4). On sustainable return were given by the younger generations, especially those aged 21 to 30, compared to all other groups of returnees. The responses of the younger generations may be to some extent caused by ignorance and inexperience, but they can also be a reason for optimism in the future of returnees.

Using the Kruskal-Wallis H test, comparing the results of the survey of attitudes to the claims about the sustainability of return in relation to the educational status of returnees (four groups of respondents) revealed a statistically significant difference ($\chi^2 = 10.21$; $df = 5$; $p = 0.00$) (Table 5).

Table 2. Mann-Whitney In a test of research on attitudes about the sustainability of return in relation to gender

Variables	Gender	Medium ranks	Sum ranks	Mann-Whitney U	Z	P
Sustainability of return	Male	162,97	29824,00	12988.00	-0.01	0.99
	Female	163,04	23151,00			

Table 3. Results of Kruskal-Wallis H test on sustainability of return in relation to age

Variables	Age	N	Medium rank	Median	Hi-square	Df	P
Sustainability of return	< 20	3	160,33	36,00	34,17	5	0,00
	21 – 30	61	210,56	53,00			
	31 – 40	64	165,95	39,50			
	41 – 50	83	174,90	41,00			
	51 – 60	59	133,47	36,00			
	> 60	55	120,68	36,00			
	Ukupno	325					

Table 4. Mann-Witney U test results on sustainability of return in relation to age

Variable	Age	Medium rank	Sum rank	Mann-whitney U	Z	p
Sustainability of return	21 – 30	71,52	4362,50	1432,50	-2.57	0.01
	31 – 40	54,88	3512,50			
	21 – 30	83,89	5117,50	1836,50	-2.81	0.01
	41 – 50	64,13	5322,50			
	21 – 30	74,25	4529,50	960,50	-4.42	0.00
	51 – 60	46,28	2730,50			
	21 – 30	72,15	4401,00	845,00	-4.61	0.00
	> 60	43,36	2385,00			
	31 – 40	71,70	4589,00	2509,00	-0.57	0.57
	41 – 50	75,77	6289,00			
	31 – 40	67,88	4344,50	1511,50	-1.91	0.06
	51 – 60	55,62	3281,50			
	31 – 40	67,45	4316,50	12833,50	-2.55	0.01
	> 60	51,34	2823,50			
	41 – 50	79,81	6624,50	1758,50	-2.87	0.00
	51 – 60	59,81	3528,50			
	41 – 50	79,52	6600,00	1451,00	-3.63	0.00
> 60	54,38	2991,00				
51 – 60	60,40	3563,50	1451,50	-0.96	0.33	
> 60	54,39	2991,50				

Subsequent comparison confirmed that there was a statistically significant difference in responses between groups in most combinations, at the level of statistical significance $p < 0.05$, except between groups without education and groups with completed primary school, and groups with secondary and higher education (Table 6). Insight into the middle ranks and medians in Table 5, and considering the direction of the answers, it can be noticed that the most favorable answers about sustainable return were given by the respondents with the highest education.

Looking at Table 7, one can see the equal representation of returnees' responses in relation to gender for the statement "The current level of agricultural land cultivation can provide sufficient income for a normal family life." Disagreement responses are more prevalent in both groups. Given the prevalence of responses, the Chi-square test ($\chi^2 = 0.40$; $p = 0.82$) did not reveal a statistically significant difference between male and female subjects.

Equal representation of returnees' responses in relation to gender is also observed for the

statement "Animal production is optimal for the engagement of resources and the existing labor force." Also, in both groups, the answers of disagreement were more represented, and the chi-square test ($\chi^2 = 0.48$; $p = 0.79$) did not determine a statistically significant difference between male and female respondents (Table 8).

Looking at Table 9, it can be seen that a higher percentage of younger returnees than older ones agree with the statement "The current level of agricultural land cultivation can provide enough income for a normal family life", but in all three groups there are more disagreements. Chi square test ($\chi^2 = 18.22$; $p = 0.00$) also revealed a statistically significant difference between different age groups.

It is also noticed that younger returnees, in a higher percentage than older ones, agree with the statement Animal production is optimal for the engagement of resources and existing labor force, but also that the youngest group has more agreement answers than disagreement with the statement. $\chi^2 = 47.55$; $p = 0.00$) also found a statistically significant difference between different age groups (Table 10).

Table 5. Results of the Kruskal-Wallis H test on the sustainability of return in relation to educational status

Variable	Education	N	Medium rank	Median	Hi-square	df	p
Sustainability of return	No education	22	108,89	35,00	25,98	3	0.00
	P.S.	90	130,42	35,00			
	H.S.	180	177,49	41,00			
	Bachelor	29	193,07	45,00			
	Total	321		37,00			

Table 6. Results of the Mann-Witney U test on the sustainability of return in relation to educational status

Variable	Education	Medium ranks	Sum rank	Mann-Whitney U	Z	p
Sustainability of return	No education	51,20	1126,50	873,50	-0.86	0.39
	P.S.	57,79	5201,50			
	No education	61,18	1346,00	1093,00	-3.43	0.00
	H.S.	106,43	19157,00			
	No education	19,50	429,00	176,00	-2.73	0.01
	Bachelor	30,93	897,00			
	P.S.	108,69	9782,00	849,500	-4.00	0.00
	H.S.	148,91	26803,00			
	P.S.	54,94	4944,50	2509,00	-2.83	0.01
	Bachelor	75,71	2195,50			
H.S.	103,16	18568,50	2278,50	-1.10	0.27	
Bachelor	116,43	3376,50				

Table 7. Representation of responses to the claim regarding land cultivation in relation to gender and results of the chi-square difference test

	Gender	Disagree			Indecisive		Agree	
		N	f	%	f	%	f	%
Agricultural processing	Male	183	110	60.11	13	7.10	60	32.89
The land provides enough income	Female	142	90	63.38	10	7.04	42	29.58

$\chi^2=0.40; p = 0.82$

Table 11 shows that higher percentage of returnees with a higher percentage agree with the statement "The current level of agricultural land cultivation can provide sufficient income for a normal family life", compared to returnees with lower educational status, but also that the most educated group is more represented answers of agreement from answers of disagreement with the set statement. Hi square test ($\chi^2 = 25.17; p = 0.00$) found a statistically significant difference between groups of different educational status.

Returnees with higher education status also agree with the statement "Animal production is optimal for the engagement of resources and the existing workforce." Compared to returnees with lower education status, but also the most educated group has more answers than disagreements with the statement. The chi-square test ($\chi^2 = 27.49; p = 0.00$) also found a statistically significant difference between groups of different educational status (Table 12).

Table 8. Representation of responses to the claim regarding animal production in relation to gender and results Hi square test differences

	Gender	Disagree			Indecisive		Agree	
		N	f	%	f	%	f	%
Animal production is optimal for resource engagement	Male	183	102	55.74	11	6.01	70	38.25
	Female	142	84	59.15	9	6.34	49	34.51

$\chi^2=0.48; p = 0.79$

Table 9. Representation of responses to the claim regarding land cultivation in relation to age and results of chi square test

	Age	Disagree			Indecisive		Agree	
		N	f	%	f	%	f	%
Cultivation of agricultural land provides sufficient income	< 30	64	34	53.13	5	7.81	25	39.06
	31 – 50	147	78	53.06	14	9.52	55	37.41
	> 50	114	88	77.19	4	3.51	22	19.30

$\chi^2=18.22; p = 0,00$

Table 10. Representation of responses to the claim regarding animal production in relation to age and results of chi square difference test

	Age	Disagree			Indecisive		Agree	
		N	f	%	f	%	f	%
Animal production is optimal for resource engagement	< 30	64	16	25.00	6	9.38	42	65.63
	31 – 50	147	80	54.42	13	8.84	54	36.73
	> 50	114	88	77.19	5	4.39	21	18.42

$\chi^2=47.55; p = 0,00$

Table 11. Representation of responses to the claim regarding land cultivation in relation to educational status and results chi square difference test

	Education	Disagree			Indecisive		Agree	
		N	f	%	f	%	f	%
Cultivation of agricultural land provides sufficient income	No education/P.S.	112	88	78.57	8	7.14	16	14.59
	H.S.	180	97	53.88	13	7.22	70	38.89
	Bachelor	33	15	45.46	2	6.06	16	48.48

$\chi^2=25.17; p = 0,00$

Table 12. Representation of responses to the claim regarding animal production in relation to educational status and results chi square difference test

	Education	Disagree			Indecisive		Agree	
		N	f	%	f	%	f	%
Animal production is optimal for resource engagement	No education/P.S.	112	85	75.89	6	5.36	21	18.75
	H.S.	180	89	49.44	11	6.11	80	44.44
	Bachelor	33	12	36.36	3	9.09	18	54.55

$\chi^2=27.49; p = 0,00$

4. CONCLUSION

Based on the conducted research, it can be concluded that the majority of returnees believe that no effort has been made by the entities to restore the area where they live as returnees and that their property has suffered damage (1992-1995) that cannot be compensated. They also believe that the destroyed or missing organizational systems of functioning of the economy and markets (1992-1995) in returnee places have not been restored to date, and that they have been restored in places where there were not many returnees work (1992-1995) and that the channels of placement of agricultural products do not accept their products. A significant number of returnees (46.5%) believe that no significant funds have been invested in the reconstruction of returnees in rural areas, and returnees mostly (61.6%) believe that those in the Republika Srpska entity, with the current level of agricultural land cultivation cannot provide enough income for the normal life of their families and most returnees (57.2%). Does not consider that animal production is optimal for the engagement of resources and the existing labor force to a statistically significant difference in the responses of returnees for the variable sustainability of return. Nor for individual claims regarding the impact of agricultural land levels on income insurance and the impact of animal production on resource engagement, by gender, but a statistical difference was found by age and educational status of returnees. More favorable answers were given by respondents of younger

age and respondents with higher educational status.

CONSENT

As per international standard or university standard, participant's written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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