EVALUATION OF THE MAIN PRODUCTION ELEMENTS OF THE VARIETY OF INDUSTRIAL HEMP (*CANNABIS SATIVA* L. VAR. *SATIVA*) *JUBILEU*, UNDER THE CONDITIONS OF THE SUCEVAVA PLATEAU

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Abstract. *One of the strategies for carbon sequestration aims, in various forms, to encourage agricultural practices that help to sequester carbon from the atmosphere and fix it in the soil or biomass in a sustainable way. Among the alternatives, industrial hemp (Cannabis sativa L. var. sativa) emerges as a key crop in supporting humanity's journey towards sustainability. A highly versatile plant, industrial hemp has numerous uses in the textile, food, pharmaceutical and energy industries, soil decontamination or erosion control, etc. The research involved three factors (row spacing, intervention method and foliar fertilization). The experiment was laid out according to the current rules of experimental technique, in the form of randomized blocks. Data were processed by the method of limiting differences (LSD). Among the parameters analysed were plant height, number of branches, seed weight per plant, TGM, vegetable oil content and yield, and finally an economic efficiency of the applied methods was performed. During the two years of the observations, the largest height was found to be 253.85 cm, with a maximum number of branches of 57.50±4.95 and a maximum amount of 125.85±59 g seeds per plant. The maximum TGM was 22.5 g, the vegetable oil content was 293.0 *** mL/kg, and the seed yield was 1569.3 *** kg/ha in 2019. The highest gross profit was obtained in 2018 and was 3558.46 lei.*

Keywords*: Cannabis sativa L. var. sativa, foliar fertilization, TGM, vegetable oil*

INTRODUCTION

The current climatic and economic scenario, represented by poor soil and climatic conditions (LUNGOCI, 2022; LUNGOCI, 2023) and geopolitical instability, push humanity towards the use of sustainable resources, in order to reduce dependence on petrochemicals and minimize the impact on the environment. Plants are precious natural resources, as they can provide both bioactive compounds (LUNGOCI, 2021) and lignocellulosic biomass. In this paper, we analyze a species that fulfills both desires, namely industrial hemp (Cannabis sativa L.), because it is a source of fiber, oil and bioactive compounds and, as such, is an emblematic example of a multifunctional crop (PUIU I., 2023). The European Green Deal strategy aims to conserve and restore natural resources and biodiversity, and ensure the sustainability of agricultural economic systems (Mîrzan 2024), leading to a shift towards sustainable agriculture, with net zero greenhouse gas emissions by 2050, and in which economic growth will be decoupled from the use of non-renewable resources. One of the strategies regarding carbon sequestration aims, in various forms, to encourage agricultural practices that contribute to capturing carbon from the atmosphere and fixing it in the soil or biomass in a sustainable way. Among the alternatives, industrial hemp (Cannabis sativa L.) appears as a key crop in supporting humanity's journey towards sustainability. . It is well known that one hectare of hemp can retain 10 tons of CO2 from the atmosphere during a single production cycle, an amount similar to one hectare of Amazonian forest in one year, thus improving air quality and having a positive impact on the environment. A versatile plant with a very high plasticity, industrial hemp is also called the "plant with 50,000 uses and benefits"; of which we list just a few: uses in the textile, food, pharmaceutical industries - recently, various by-products of plant origin are introduced into films and gels for better absorption in the body or to fight pathogens

(RÎMBU, 2024; LUNGOCI, 2023), energy, used for soil decontamination or combating erosion, etc. Also, seedlings stimulated through various physical and chemical processes (BURDUCEA, 2022; MOTRESCU, 2023) represent an important source of nutrients easily accessible to the human body.

MATERIAL AND METHODS

Jubileu is a monoecious variety, approved for seed and oil production (33.8%). It is a very early variety, seed maturation occurs at the beginning of August, 15-20 days earlier than the Zenit variety. The production of stems and fibers is close to that of the Zenit variety, being an ultra-early derivation of its component families. Being an early variety, the height of the stems is much reduced to 1.5-2 m. The sowing rate is 10 kg/ha, at a row spacing of 45 cm. The experience is a multifactorial one: Factor A – Row spacing: a_1 - row spacing 45 cm; a_2 - row spacing 70 cm. Factor B – Cultivation method, with graduations: b_1 – uncut; b_2 – cut x 1; b_3 – cut x 2; b_4 – rolled. Factor C - Fertilization variant, with foliar fertilizers c_1 - unfertilized; c_2 - Blackjak; c_3 - Biohumusol. The sowing of the lots was carried out with the K-1 manual seeder, marking the rows with a marker.

Evaluation of the vegetable oil content - under laboratory conditions, for a more precise determination, lipids are extracted using the Soxhlet apparatus, with a lipophilic solvent (hexane, petroleum ether, etc.). The amount of lipids extracted is related to the amount of natural product taken into work and is expressed as a percentage.

The mass of 1000 seeds (grains) is a useful parameter of seed size and is determined according to the provisions of SR 6123/1999. The mass of 1000 seeds refers to the mass or weight of seeds with the moisture present at the time of determination and is expressed in grams. The principle of the method consists in counting the seeds from the entire sample to be analyzed, or repetitions of it. For counting, special counting devices can be used or the seeds are separated manually and counted. Statistical analysis of the data - The results obtained were statistically interpreted by variance analysis and calculation of limit differences. The validation and valorization of the results obtained in the experiments will be carried out according to the methodology of three-factor experiments (MÎRZAN, 2023).

From the climatic data taken from the Rădăuți meteorological station presented, it can be seen that in the case of the thermal regime, the differences from the multiannual average are quite small. Very large differences exist in the case of the pluviometric regime. In the case of temperatures, in 2018, the deviations from the multiannual average varied between -6.3 °C and 4 °C. The largest deviation was in February of -6.3 °C, and the smallest deviation was recorded in January and was 0.4 °C.

The rainfall regime is strongly influenced by climate change through the deficit of precipitation and its unequal distribution during the vegetation period. In 2018, the largest deficit was recorded in July, with 48.2 mm, and the richest month in precipitation was May with a positive deviation of 49.9 mm. In 2019, the thermal regime had much greater differences compared to the multiannual monthly averages of the previous year. The highest values were recorded in July at 19.2 °C, and the lowest value was recorded in February, with - 5.2 °C. Regarding the rainfall regime, we can see that it was richer in precipitation by 11 mm. The largest differences from the multiannual average were recorded in July, being 56.6 mm, and the smallest deviations were recorded in March, being 6.3 mm.

RESULTS AND DISCUSSIONS

The interaction between the 3 factors gives us an overview of the research carried out. From *table 1* we can see that in the variants where the distance of 45 cm between the rows prevailed, and in the one/two cutting intervention method, the differences were very large and statistically assured.

Thus, in the variants $a_1 \times b_3 \times c_2$, $a_1 \times b_2 \times c_3$, $a_1 \times b_3 \times c_3$, $a_2 \times b_3 \times c_2$, $a_2 \times b_3 \times c_3$, $a_2 \times b_3 \times c_1$, $a_1 \times b_4 \times c_2$, $a_1 \times b_3 \times c_1$, $a_1 \times b_1 \times c_3$, $a_1 \times b_2 \times c_3$, $a_1 \times b_2 \times c_1$ the differences were very significantly positive.

In the variants $a_1 \times b_4 \times c_1$, and $a_2 \times b_1 \times c_3$ the differences were between 11.3 mL/kg seeds and 11.6 mL/kg seeds, these being distinctly positive significant, and a significant positive difference was found in the variant $a_1 \times b_1 \times c_2$, this being 11.0 mL/kg seeds.

The variants $a_1 \times b_1 \times c_1$, $a_2 \times b_4 \times c_3$, $a_2 \times b_2 \times c_1$, $a_2 \times b_2 \times c_2$, $a_2 \times b_2 \times c_3$, $a_2 \times b_4 \times c_2$, did not have statistically significant differences, the means being very small and close to the control variant.

Regarding the negative differences, we can note that a significantly negative difference was found in the variant $a_2 \times b_1 \times c_2$, with a value of -8.0 mL/kg seeds. Also, statistically assured negative values are found in the variants $a_2 \times b_4 \times c_1$, $a_1 \times b_4 \times c_3$, the differences being between -16.7 mL/kg seeds and 24.4 mL/kg seeds, these being very significant.

Table 1

The influence of the interaction between row spacing (A) x intervention method (B) x foliar treatment (C) on the TGM in the Jubileu variety

Interaction (A x B x C)	2018			Interaction (A x B x C)	2019		
	TGM (g)	Difference (g)	Sign.		TGM (g)	Difference (g)	Sign.
$a_2 \times b_1 \times c_2$	20.8	1.0		$a_1 \times b_3 \times c_2$	22.5	2.4	
$a_1 \times b_2 \times c_1$	20.6	0.8		$a_1 \times b_2 \times c_2$	22.1	2.0	
$a_2 \times b_2 \times c_1$	20.4	0.6		$a_1 \times b_1 \times c_2$	21.5	1.4	
$a_2 \times b_2 \times c_2$	20.2	0.4		$a_2 \times b_2 \times c_3$	21.3	1.2	
$a_1 \times b_2 \times c_3$	20.2	0.4		$a_2 \times b_1 \times c_2$	21.3	1.2	
$a_1 \times b_2 \times c_2$	20.2	0.4		$a_1 \times b_3 \times c_3$	21.3	1.2	
$a_1 \times b_3 \times c_2$	20.1	0.3		$a_1 \times b_3 \times c_1$	21.3	1.2	
$a_2 \times b_1 \times c_1$	19.8	mt.	-	$a_2 \times b_1 \times c_3$	21.0	0.9	
$a_2 \times b_2 \times c_3$	19.7	-0.1		$a_1 \times b_1 \times c_3$	20.7	0.6	
$a_1 \times b_1 \times c_3$	19.7	-0.1		$a_2 \times b_3 \times c_1$	20.4	0.3	
$a_1 \times b_3 \times c_3$	19.6	-0.2		$a_2 \times b_1 \times c_1$	20.1	mt.	-
$a_1 \times b_1 \times c_2$	19.6	-0.2		$a_1 \times b_1 \times c_1$	20.1	0.0	
$a_2 \times b_3 \times c_1$	19.3	-0.5		$a_2 \times b_3 \times c_2$	20.0	-0.1	
$a_1 \times b_3 \times c_1$	19.1	-0.7		$a_2 \times b_2 \times c_1$	20.0	-0.1	
$a_2 \times b_3 \times c_3$	19.0	-0.8		$a_2 \times b3 \times c_3$	19.8	-0.3	
$a_2 \times b_3 \times c_2$	18.8	-1.0		$a_2 \times b_2 \times c_2$	19.7	-0.4	
$a_2 \times b_4 \times c_1$	18.6	-1.2		$a_1 \times b_2 \times c_1$	18.5	-1.6	o
$a_1 \times b_1 \times c_1$	18.6	-1.2		$a_1 \times b_4 \times c_3$	17.9	-2.2	ooo
$a_2 \times b_1 \times c_2$	18.2	-1.6	o	$a_1 \times b_4 \times c_2$	17.9	-2.2	ooo
$a_1 \times b_4 \times c_1$	18.1	-1.7	o	$a_2 \times b_4 \times c_3$	17.8	-2.3	ooo
$a_2 \times b_4 \times c_3$	17.8	-2.0	oo	$a_1 \times b_4 \times c_1$	17.2	-2.9	ooo
$a_1 \times b_4 \times c_3$	17.8	-2.0	oo	$a_2 \times b_4 \times c_1$	17.1	-3.0	ooo
$a_1 \times b_4 \times c_2$	17.8	-2.0	oo	$a_2 \times b_4 \times c_2$	16.9	-3.2	ooo
		LSD 5%	1.3			LSD 5%	1.2
		LSD1%	2.0			LSD1%	1.6
		LSD 0.1%	3.4			LSD 0.1%	2.2

The statistical analysis of the interaction between the three factors taken into study highlights the fact that most of the variants are statistically assured, except for the variants $a_1 \times b_2 \times c_1$, $a_1 \times b_4 \times c_1$, and $a_2 \times b_2 \times c_1$ for which the differences compared to the control variant are not statistically assured. For 18 of these, the differences are very significantly positive, the values varying between 18.7 mL/kg seeds

for the variant a_2 x b_4 x c_1 and 54.0 mL/kg seeds for the variant $a_2 \times b_3 \times c_3$. For the variant $a_1 \times b_3 \times c_1$ the difference was 10.3 mL/kg seeds, this being distinctly significant.

For the variants not statistically assured $a_1 \times b_2 \times c_1$, $a_1 \times b_4 \times c_1$ and $a_2 \times b_2 \times c_1$ the differences were between 0 and -2.3 mL/kg seeds. The $a_1 \times b_1 \times c_1$ variant is the only one that recorded a statistically significant negative difference, this being -7.3 mL/kg of seeds.

Table 2

The influence of the interaction between row spacing (A) x intervention method (B) x foliar treatment (C) on the oil content of the Jubileu variety

Interaction (A x B x C)	2018			
	Qantity (mL/kg)	Difference from control (%)	Difference (mL)	Significance
$a_2 \times b_3 \times c_3$	293.0	122.59	54.0	***
$a_1 \times b_4 \times c_2$	286.3	119.79	47.3	***
$a_1 \times b_4 \times c_3$	286.0	119.67	47.0	***
$a_2 \times b_1 \times c_2$	284.0	118.83	45.0	***
$a_1 \times b_3 \times c_3$	284.0	118.83	45.0	***
$a_1 \times b_2 \times c_3$	284.0	118.83	45.0	***
$a_2 \times b_3 \times c_2$	283.7	118.70	44.7	***
$a_2 \times b_1 \times c_3$	283.7	118.70	44.7	***
$a_2 \times b_2 \times c_3$	281.7	117.87	42.7	***
$a_1 \times b_2 \times c_2$	281.7	117.87	42.7	***
$a_1 \times b_3 \times c_2$	279.7	117.03	40.7	***
$a_2 \times b_4 \times c_2$	276.0	115.48	37.0	***
$a_2 \times b_2 \times c_2$	274.0	114.64	35.0	***
$a_2 \times b_4 \times c_3$	273.0	114.23	34.0	***
$a_1 \times b_1 \times c_2$	272.7	114.10	33.7	***
$a_1 x\ b_1 \times c_3$	267.0	111.72	28.0	***
$a_2 \times b_3 \times c_1$	263.7	110.33	24.7	***
$a_2 \times b_4 \times c_1$	257.7	107.82	18.7	***
$a_1 \times b_3 \times c_1$	249.3	104.31	10.3	**
$a_2 \times b_1 \times c_1$	239.0	100.00	mt.	-
$a_1 \times b_2 \times c_1$	239.0	100.00	0.0	
$a_1 \times b_4 \times c_1$	238.7	99.87	-0.3	
$a_2 \times b_2 \times c_1$	236.7	99.04	-2.3	
$a_1 \times b_1 \times c_1$	231.7	96.95	-7.3	o
			LSD 5%	6.4
			LSD1%	8.8
			LSD 0.1%	12.0

From the analysis of the interaction between the 3 factors taken into study, presented in *table 3*, it can be seen that in 2018 there were 16 variants in which the differences were very significantly positive, ranging between 37.3 kg/ha and 368.0 kg/ha. In variant $a_2 \times b_1 \times c_3$, the difference was distinctly significant, being 14.0 kg/ha. Very significantly negative differences are found in variants *a1 x* $b_4 \times c_3$, $a_1 \times b_4 \times c_2$, $a_1 \times b_4 \times c_1$, $a_2 \times b_4 \times c_2$, $a_2 \times b_4 \times c_3$ and $a_2 \times b_4 \times c_1$ in which the differences varied between – 380.4 kg/ha and - 539.7 kg/ha. In 2019 the meanings were the same in all variants taken into study, except for variant $a_2 \times b_1 \times c_3$ in which the difference was very significantly positive. As in the previous year, we also encounter very significantly negative differences in 6 variants, these having values between – 498.6 kg/ha and – 540.3 kg/ha.

Table 3

Influence of the interaction between row spacing (A) x intervention method (B) x foliar treatment (C) on seed production in the Jubileu variety

Interaction (A x B x C)	2018			Interaction (A x B x C)	2019		
	Yield (kg/ha)	Difference (kg)	Sign.		Yield (kg/ha)	Difference (kg)	Sign.
a_1 x b_3 x c_2	1541.7	368.0	***	a_2 x b_3 x c_2	1569.3	248.0	***
a_1 x b_3 x c_3	1532.7	359.0	***	a_2 x b_3 x c_1	1565.7	244.4	***
a_1 x b_3 x c_1	1508.7	335.0	***	a_2 x b_3 x c_3	1559.3	238.0	***
a_2 x b_3 x c_3	1450.0	276.3	***	a_2 x b_2 x c_2	1536.7	215.4	***
a_2 x b_3 x c_2	1446.7	273.0	***	a_2 x b_2 x c_3	1521.0	199.7	***
a_2 x b_3 x c_1	1437.0	263.3	***	a_1 x b_3 x c_2	1477.3	156.0	***
a_1 x b_2 x c_2	1434.0	260.3	***	a_1 x b_3 x c_3	1473.7	152.4	***
a_1 x b_2 x c_3	1421.7	248.0	***	a_1 x b_2 x c_2	1455.0	133.7	***
a_1 x b_2 x c_1	1370.7	197.0	***	a_2 x b_2 x c_1	1449.7	128.4	***
a_1 x b_1 x c_2	1332.7	159.0	***	a_1 x b_3 x c_1	1440.7	119.4	***
a_1 x b_1 x c_3	1330.3	156.6	***	a_1 x b_2 x c_1	1438.7	117.4	***
a_2 x b_2 x c_2	1319.3	145.6	***	a_1 x b_2 x c_3	1434.7	113.4	***
a_2 x b_2 x c_3	1319.0	145.3	***	a_1 x b_1 x c_2	1419.3	98.0	***
a_2 x b_2 x c_1	1278.0	104.3	***	a_1 x b_1 x c_3	1414.0	92.7	***
a_1 x b_1 x c_1	1264.0	90.3	***	a_2 x b_1 x c_3	1385.3	64.0	***
a_2 x b_1 x c_2	1211.0	37.3	***	a_1 x b_1 x c_1	1382.3	61.0	***
a_2 x b_1 x c_3	1187.7	14.0	**	a_2 x b_1 x c_2	1381.0	59.7	***
a_2 x b_1 x c_1	1173.7	mt.	-	a_2 x b_1 x c_1	1321.3	mt.	-
a_1 x b_4 x c_3	793.3	-380.4	ooo	a_2 x b_4 x c_2	822.7	-498.6	ooo
a_1 x b_4 x c_2	783.0	-390.7	ooo	a_2 x b_4 x c_3	816.0	-505.3	ooo
a_1 x b_4 x c_1	747.7	-426.0	ooo	a_1 x b_4 x c_2	790.0	-531.3	ooo
a_2 x b_4 x c_2	705.3	-468.4	ooo	a_1 x b_4 x c_3	785.7	-535.6	ooo
a_2 x b_4 x c_3	689.0	-484.7	ooo	a_1 x b_4 x c_1	785.0	-536.3	ooo
a_2 x b_4 x c_1	643.0	-539.7	ooo	a_2 x b_4 x c_1	781.0	-540.3	ooo
		LSD 5%	11.0			LSD 5%	7.8
		LSD1%	15.1			LSD1%	11.1
		LSD 0.1%	20.6			LSD 0.1%	17.2

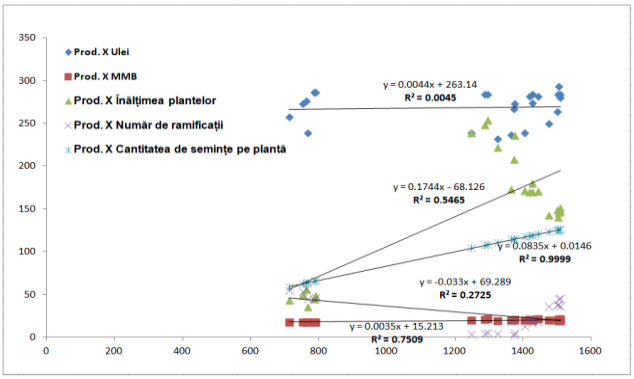

Fig. 1. *Correlation between the factors studied in the Jubileu variety*

For the Jubileu variety in 2018, the highest profit was also obtained for the a_1 x b_3 x c_2 variant, which was 3558.46 lei, and the lowest profit was obtained for the a_2 x b_4 x c_1 variant, which obtained a negative profit of -126.6 lei.

Table 4

Economic efficiency of the cultivation of Cannabis sativa L., Jubileu, 2018

Interaction	Yield (kg/ha)	Production value lei/ha	Total expenses lei/ha	Production cost lei/kg	Gross profit
$a_1 \times b_1 \times c_3$	1330.3	5055.14	2300	1.73	2755.14
$a_2 \times b_2 \times c_3$	1319	5012.2	2600	1.97	2412.2
$a_2 \times b_2 \times c_2$	1319.3	5013.34	2570	1.95	2443.34
$a_2 \times b_3 \times c_2$	1446.7	5497.46	2300	1.59	3197.46
$a_1 \times b_2 \times c_3$	1421.7	5402.46	2600	1.83	2802.46
$a_1 \times b_2 \times c_1$	1370.7	5208.66	2570	1.87	2638.66
$a_1 \times b_3 \times c_2$	1541.7	5858.46	2300	1.49	3558.46
$a_1 \times b_3 \times c_1$	1508.7	5733.06	2600	1.72	3133.06
$a_1 \times b_3 \times c_3$	1532.7	5824.26	2570	1.68	3254.26
$a_1 \times b_4 \times c_3$	793.3	3014.54	2300	2.90	714.54
$a_1 \times b_4 \times c_1$	747.7	2841.26	2600	3.48	241.26
$a_1 \times b_4 \times c_2$	783	2975.4	2570	3.28	405.4
$a_2 \times b_1 \times c_2$	1211	4601.8	2300	1.90	2301.8
$a_2 \times b_1 \times c_3$	1187.7	4513.26	2600	2.19	1913.26
$a_2 \times b_1 \times c_1$	1173.7	4460.06	2570	2.19	1890.06
$a_1 \times b_1 \times c_2$	1332.7	5064.26	2300	1.73	2764.26
$a_1 \times b_1 \times c_1$	1264	4803.2	2600	2.06	2203.2
$a_2 \times b_2 \times c_1$	1278	4856.4	2570	2.01	2286.4
$a_2 \times b_3 \times c_3$	1450	5510	2300	1.59	3210
$a_1 \times b_2 \times c_2$	1434	5449.2	2600	1.81	2849.2
$a_2 \times b_3 \times c_1$	1437	5460.6	2570	1.79	2890.6
$a_2 \times b_4 \times c_2$	705.3	2680.14	2300	3.26	380.14
$a_2 \times b_4 \times c_3$	689	2618.2	2600	3.77	18.2
$a_2 \times b_4 \times c_1$	643	2443.4	2570	4.00	**-126.6**

In 2019, the highest profit for the Jubileu variety was obtained for the $a_2 \times b_3 \times c_2$ variant, which was 3640.80 lei, and the lowest profit for the $a_1 \times b_4 \times c_3$ variant, which was 335.66 lei. As with the previous variety, the highest profit was obtained for the variant in which two cuts were made, and the lowest for the variant in which the roller was made.

Table 5

Economic efficiency of the cultivation of Cannabis sativa L., Jubileu, 2019

Interaction	Yield (kg/ha)	Production value lei/ha	Total expenses lei/ha	Production cost lei/kg	Gross profit
1	2	3	4	5	6
$a_1 \times b_2 \times c_1$	1438.7	5467.06	2310	1.61	3157.06
$a_1 \times b_1 \times c_3$	1414	5373.2	2650	1.87	2723.2
$a_2 \times b_1 \times c_3$	1385.3	5264.14	2620	1.89	2644.14
$a_1 \times b_2 \times c_2$	1455	5529	2310	1.59	3219
$a_1 \times b_2 \times c_3$	1434.7	5451.86	2650	1.85	2801.86
$a_1 \times b_1 \times c_2$	1419.3	5393.34	2620	1.85	2773.34
1	2	3	4	5	6
$a_1 \times b_3 \times c_2$	1477.3	5613.74	2310	1.56	3303.74
$a_2 \times b_2 \times c_1$	1449.7	5508.86	2650	1.83	2858.86
$a_1 \times b_3 \times c_1$	1440.7	5474.66	2620	1.82	2854.66

a_2 x b_4 x c_3	816	3100.8	2310	2.83	790.8
a_2 x b_4 x c_1	781	2967.8	2650	3.39	317.8
a_1 x b_4 x c_1	785	2983	2620	3.34	363
a_1 x b_1 x c_1	1382.3	5252.74	2310	1.67	2942.74
a_2 x b_1 x c_1	1321.3	5020.94	2650	2.01	2370.94
a_2 x b_1 x c_2	1381	5247.8	2620	1.90	2627.8
a_2 x b_2 x c_2	1536.7	5839.46	2310	1.50	3529.46
a_2 x b_2 x c_3	1521	5779.8	2650	1.74	3129.8
a_1 x b_3 x c_3	1473.7	5600.06	2620	1.78	2980.06
a_2 x b_3 x c_2	1569.3	5963.34	2310	1.47	**3640,80**
a_2 x b_3 x c_3	1559.3	5925.34	2650	1.70	3275.34
a_2 x b_3 x c_1	1565.7	5949.66	2620	1.67	3329.66
a_2 x b_4 x c_2	822.7	3126.26	2310	2.81	816.26
a_1 x b_4 x c_3	785.7	2985.66	2650	3.37	335.66
a_1 x b_4 x c_2	790	3002	2620	3.32	382

CONCLUSIONS

Industrial hemp is a very versatile crop with a total value (the root is rich in carbohydrates, the stem in fibers, the inflorescence and the leaf in cannabinoids) that fits perfectly into the new directions and regulations established at the European Community level and worldwide;

It successfully responds to the new paradigms that today's society is facing; depollution of heavy metal soils, carbon sequestration, reduction of weeding and improvement of the physico-chemical qualities of the soil, suitability for biodynamic agriculture;

The natural setting in which the studies were carried out, the Suceava Plateau, satisfies the pedo-climatic conditions for hemp cultivation with precipitation largely equitably distributed throughout the vegetation period, optimal growth and development temperatures and nutrient-rich soils;

The agricultural years 2018-2019 in which the studies were conducted can be considered normal in terms of rainfall with a difference of 117.3 mm compared to the multiannual value in 2018 and 29.1 mm in 2019. Temperatures higher by 2-3 °C due to the irreversible phenomenon of global warming;

TGM: the highest weight of the TGM was obtained at the interaction a_2 x b_1 x c_1, which is 20.8 g.

Vegetable oil: the largest amount of vegetable oil was obtained in the variant a_2 x b_3 x c_3, which is 293.0 mL/kg;

Yield: The highest seed production was obtained at the a_2 x b_3 x c_2 interaction, which was 1569.3 kg/ha.

The highest gross profit was recorded for the a_2 x b_3 x c_3 variant, which was 3640.8 lei in 2019.

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