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INVESTMENT MANAGEMENT IN THE CULTIVATION OF LAVENDER FOR THE PRODUCTION OF THE ESSENTIAL OIL

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Abstract

The group of authors purposesin this article to analyze the benchmarking of budget in the lavender culture. Group of authors developed the economic-financial budgets for the cultivation of lavender, which can be considered an important source of information for benchmarking. The authors used data from the primary records in agricultural holdings, which practice lavender cultivation. The analysis methods used in the article are benchmarking and budgeting of production for comparing the data and economic efficiency. Based on the research and analysis carried out, strategic conclusions were formulated for the sustainable development of the lavender branch, necessary for the implementation by the actors of the value chains in the sector. The final conclusion of the group of authors boils down to: lavender culture is highly profitable, the production processes are fully mechanized and it is a payment with increased resistance to drought (in dry years the quality of the essential oil is higher), which is extremely important in conditions of climate resilience and it is recommended to be practiced for small farmers to diversify incomes in rural areas.

Key words**:** *budget, profitability, sales income, cost of sales, gross margin, lavender*

INTRODUCTION

Investments are important for the development of the all agricultural sectors in the Republic of Moldova [10, 12]. Some authors pointed out the importance of investments in horticulture, emphasizing the fruit-trees sector [11, 13].
The sector of hetero-oleaginous plants is also a component of domestic horticulture and is one of perspective, because it is profitable, the products enjoy interest on the regional and international markets, the production factors are favorable, support from the authorities / donors and the experience / recorded history facilitate its sustainable development [9].
The post-harvest infrastructure must be developed in such a way that the result of the processing of the raw material hetero-oleaginous plants (lavender) results in the following estimated structure of finished products [8]:
-the largest share is intended for food industry products – 50%;
-30% cosmetology and hygiene products;
-20% for medicine (for which higher growth is expected in the future).
The analysis presented in this article by the group of authors is based on the analysis of the economic aspects of lavender cultivation, which is a branch with great development potential.
The analytical data presented serve as a complex source of information for the main actors of the value chain for lavender, the analysis of the possibilities of optimizing production costs and increasing economic efficiency, which will ultimately ensure high competitiveness of the extractor and its sustainable development through the creation of partnerships among lavender sector clusters.

MATERIALS AND METHODS

The industrial lavender cultivation budget will be analyzed in the conventional and conventional system, which is the activity plan expressed in quantitative units, translated into value units, the calculation of the necessary financial resources that should be invested/spent to achieve the predetermined goals. The budget provides a way of documenting the number of resources that are used to achieve the planned objectives and for managerial control of the activity [5].

For the cultivation of industrial lavender in the conventional system, two budgets will be developed for the area of one hectare, namely:

(1)the investment budget for planting and caring for the lavender until it comes to fruition in the common conventional system for all varieties;

(2)the aggregate budget of incomes and expenses when growing lavender per fruit in the conventional system, where the oil yield was estimated at 70% of the production potential per unit area.

RESULTS AND DISCUSSIONS

For farmers, it is important to select lavender varieties that ensure competitive production, and this can be achieved with the following varieties: Vis Magic – 10; Moldovan – 4; Unique Aroma; Alba – 7, where the planting material is of high quality and performance. In the case of the Chișineovscaia 90 (C90) variety, which is the most widespread and cultivated in the republic, the planting material is of medium quality, and the essential oil is of high quality and the investments per hectare planted with lavender are lower [9]. In Table 1 there are estimated the investments for planting one hectare of lavender in a conventional system with the Chișineovscaia 90 (C90) variety.

The amount of investments for the establishment and care until the entry into the fruit of a hectare of lavender in the conventional circuit constitutes 6,897 Euro, the largest weight representing the cost of the means of production 51.5%.

An important factor in the cultivation of lavender is the profitability of the crop, namely, the gross profit obtained from the operational activity, which for different technologies and varieties of lavender is different, because the biological characteristics and production potential are different. Next, we will analyze the lavender cultivation budgets in the conventional circuit for the following Moldovan varieties, such as: Chișineovscaia 90; Magic Dream – 10; Moldovan – 4; Unique Aroma; White – 7.

The income and expenditure budget for the cultivation of one hectare of industrial lavender in a conventional system for the Chișineovscaia 90 variety is presented in Table 2.

Table 1. The investment budget for planting and caring for lavender until fruiting in the conventional system (area – 1 ha, scheme: 50 cm between plants per row, 160 cm between rows)

Specification	MU	Quantity	Unit price, Euro	Total - 1 year	Total - 2 year	Total - 3 year	Total years II + III	Total (up to fruit entry)	
								Euro	Structure, %
I. The cost of the means of production	**Euro**	**X**	**X**	**2,641**	**486**	**425**	**911**	**3,552**	**51.5%**
Planting material (scheme 1.6x0.5m)	unit	14.286	0.12	1.714			0	1.714	24.9%
Planting material filling the gaps (5% bushes)	unit	714	0.12		86		86	86	1.2%
I'm gaining weight. organic at planting	t	29	20.00	571			0	571	8.3%
Total mineral fertilizers:				190	37	37	74	264	3.8%
Diamophos NPK 10:26:26	kg	200	0.95	190			0	190	2.8%
Microelement - Poly-Feed 19:19:19 + 6 ME	kg	9	4.10		37	37	74	74	1.1%
Chemicals	Euro			132	331	360	690	823	11.9%
Herbicides - glyphosate, 540 g/l, salt	l	10.00	13.23	132			0	132	1.9%
Herbicides - metamitron	l	1.50	48.30		72	72	145	145	2.1%
Herbicides - quizalofop-p-ethyl	l	1.50	23.00		35	35	69	69	1.0%

Insecticide - lambda cyhalothrin	l	0.60	48.91			29	29	29	0.4%
Insecticide - acetamiprid	l	0.60	136.30		82	82	164	164	2.4%
Fungicides - tribasic copper sulfate	kg	5.00	17.94		90	90	179	179	2.6%
Fungicides - sulfur	kg	3.00	5.08		15	15	30	30	0.4%
Fungicides - pyrimethanil	kg	1.00	36.92		37	37	74	74	1.1%
Water (when planting and caring for plantation)	m^3	23	0.20	5	5		5	9	0.1%
Fuel (field travel)	l	20.00	1.42	28	28	28	57	85	1.2%
II. Mechanized services	**Euro**	**X**	**X**	**871**	**405**	**77**	**482**	**1,353**	**19.6%**
Deforestation and weed challenge	ha	1.0	17.7	18			0	18	0.3%
Semi-deep plow (35-40 cm)	ha	1.0	78.7	79			0	79	1.1%
Leveling the clearing plow (2 directions)	ha	2.0	17.2	34			0	34	0.5%
Transport services (sprinkled water - 2 times)	t/km	2.0	1.4	3			0	3	0.0%
Introduction of herbicides (2 times)	ha	2.0	10.4	21			0	21	0.3%
Total cultivation - 2 times	ha	2.0	21.4	43			0	43	0.6%
Transporting planting material	km	200.0	1.4	286			0	286	4.2%
Water transport for planting and irrigation	t x km	228.6	1.4	327	327		327	655	9.5%
Fertilizer transportation services	t/km	3.0	1.4	4			0	4	0.1%
Fertilization by spreading	ha	1.0	13.2	13			0	13	0.2%
Digging strips for planting	ha	1.0	19.7	20			0	20	0.3%
Mechanized cultivation between rows - 3 times	ha	3.00	14.57		44	44	87	87	1.3%
Transport services (sprinkled water)	ha	3.0	1.4	3	4	4	9	11	0.2%
Spraying the fields	ha	3.0	9.8	20	29	29	59	79	1.1%
III. Manual operations	**Euro**	**X**	**X**	**525**	**321**	**350**	**671**	**1,197**	**17.4%**
Picketing the area for planting	pers/day	6.0	15.0	90			0	90	1.3%
Mulching with soil	pers/day	5.0	15.0	75			0	75	1.1%
Planting bushes	pers/day	23.8	15.0	357			0	357	5.2%
Filling in the blanks	pers/day	4.8	15.0		71		71	71	1.0%
Cut the inflorescences	pers/day	6.7	15.0		100	200	300	300	4.3%
Loading and unloading of fertilizers	pers/day	0.2	15.0	3			0	3	0.0%
Weeding between bushes in a row (2 times)	pers/day	10.0	15.0		150	150	300	300	4.3%
IV. Land tax	**Euro**	**1**	**5.5**	**5.5**	**5.5**	**5.5**	**11.0**	**16.5**	**0.2%**
V. Rent land payment	**Euro**	**1**	**150**	**150**	**150**	**150**	**300**	**450**	**6.5%**
IV. Unexpected expenses (%)	**Euro**	**X**	**X**	**210**	**68**	**50**	**119**	**328**	**4.8%**
TOTAL investments (I+II+III)	**Euro**	**X**	**X**	**4,402**	**1,436**	**1,059**	**2,495**	**6,897**	**100.0%**

Source: Calculations of the group of authors [4, 5, 6, 7, 8, 9].

Table 2. The budget for the cultivation of industrial lavender per fruit variety Chișineovscaia 90 in the conventional system (area – 1 ha, scheme 50 cm between plants per row, 160 cm between rows)

Specification	MU	Recommended technology per 1 ha			
		Quantity/rate per hectare	Unit price, Euro	Sum, Euro	Consumption structure, %
I. Net sales	**Euro**		**X**	**3,767.50**	**X**
Essential oil	kg	68.5	55.00	3,767.50	X
II. The cost of the means of production	**Euro**	**X**	**X**	**551.73**	**24.94**
Mineral fertilizers:				177.62	8.03
Diamophos NPK 10:26:26	kg	150.00	1.02	153.66	6.95
Microelement - Poly-Feed 19:19:19 + 6 ME	kg	6.00	3.99	23.96	1.08
Chemicals:				359.92	16.27
Herbicides - metamitron	l	1.50	48.30	72.45	3.28
Herbicides - quizalofop-p-ethyl	kg	1.50	23.00	34.50	1.56
Insecticide - lambda cyhalothrin	l	0.60	48.91	29.35	1.33
Insecticides - acetamiprid	l	0.60	136.30	81.78	3.70
Fungicides - tribasic copper sulfate	l	5.00	17.94	89.70	4.06
Fungicides - sulfur	kg	3.00	5.08	15.23	0.69
Fungicides - pyrimethanil	kg	1.00	36.92	36.92	1.67
Fuel (field travel)	l	10.00	1.42	14.20	0.64
III. The cost of mechanized services	**Euro**	**X**	**X**	**645.30**	**29.17**
Transporting water to sprinkle the fields	ha	5.0	1.4	7.16	0.32
Spraying the fields	ha	4.0	9.83	39.33	1.78
Cultivation between the rows	ha	3.0	14.57	43.70	1.98
Mechanized harvesting of inflorescences	ha	1.0	51.51	51.51	2.33

Harvest transportation	t x km	112.5	1.43	161.10	7.28
Processing services	Euro/kg	68.5	5	342.50	15.48
IV. The cost of manual operations	**Euro**	**X**	**X**	**223.59**	**10.11**
Weeding between the rows (2 times)	pers/day	8.00	15.00	120.00	5.42
Harvest support	pers/day	3.75	15.00	56.25	2.54
Loading and unloading the crop	pers/day	3.00	15.00	45.00	2.03
Loading and unloading of fertilizers	pers/day	0.16	15.00	2.34	0.11
V. Other costs and fees	**Euro**	**X**	**X**	**686.04**	**31.01**
Plantation wear and tear (not allocated to flow)	Euro	X	X	530.54	23.98
Rent land payment	Euro	1.00	150.00	150.00	6.78
Land tax	Euro	1.00	5.50	5.50	0.25
VI. Contingency expenses ((II+III+IV+V)*10%)	**Euro**	**X**	**X**	**105.33**	**4.76**
VII. Variable + fixed consumptions (II+III+IV+V+VI)	**Euro**	**X**	**X**	**2,211.99**	**100.00**
VIII: Gross profit (gross margin) (I-VII)	**Euro**	**X**	**X**	**1,555.51**	**X**
IX: Profitability (VIII / VII*100%)	**%**	**X**	**X**	**70.32**	**X**

Source: Calculations of the group of authors [4, 5, 6, 7, 8, 9, 10].

Note. The proposed budget is a model for entrepreneurs and may vary depending on the production factors and specific conditions of the beneficiary. In "Other costs and taxes" (V) are included the costs for the annual depreciation of the plantation in the amount of 530.54 Euro. Depreciation is calculated from a financial point of view for the recovery of the investments made based on their term of operation, and their value remains under the management of the entrepreneur for the next year.

Examining the data in from Table 2, we conclude that the Chișineovscaia 90 variety lavender culture is profitable in the conventional system, because it allows the annual gross profit to be obtained in the amount of 1,555.51 Euro per hectare (sum of sales revenue – 3,767.5 Euro and cost of sales – 2,211.99 Euro).

The cash flow available at the end of the year for the production of industrial lavender variety Chișineovscaia 90 in the conventional circuit will be 2,263 Euros, which is enough to ensure the need for cash for the next year and the receipt of dividends by the founders (Table 3).

Profitability is the economic category that expresses the ability of the enterprise to obtain profit, which reflects its performance. The achievement of this objective is conditioned by the performance of a profitable activity.

Table 4 presents the main indicators of the economic efficiency of the lavender culture in the conventional system of the Chișineovscaia 90 variety per surface unit.

Table 3. Cash flow when growing industrial lavender Chișineovscaia 90 variety in conventional system

Specification	1	Cash flow by months of the year, Euro											
	Total - area, Euro	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Initial cash flow	**X**	**0**	**0**	**0**	**-2**	**-538**	**-691**	**-1,066**	**-1,476**	**-1,492**	**-1,494**	**2,272**	**2,263**
I. Net sales	**3,768**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3,768**	**0**	**0**
Essential oil	3,768										3,768		
II. The cost of the means of production	**552**	**0**	**0**	**2**	**471**	**62**	**10**	**2**	**2**	**2**	**2**	**2**	**0**
Mineral fertilizers:	178	0	0	0	162	8	8	0	0	0	0	0	0
Diamophos NPK 10:26:26	154				154								
Microelement - Poly-Feed 19:19:19 +	24				8	8	8						
Chemicals:	360	0	0	0	308	52	0	0	0	0	0	0	0
Herbicides - metamitron	72				72								
Herbicides - quizalofop-p-ethyl	35				35								
Insecticide - lambda cyhalothrin	29				29								
Insecticides - acetamiprid	82				82								
Fungicides - tribasic copper sulfate	90				90								
Fungicides - sulfur	15					15							
Fungicides - pyrimethanil	37					37							
Fuel (field travel)	14			2	2	2	2	2	2	2	2	2	
III. The cost of mechanized services	**645**	**0**	**0**	**0**	**38**	**23**	**292**	**278**	**15**	**0**	**0**	**0**	**0**
Transporting water to sprinkle the fields	7				4	4							

Spraying the fields	39				20	20							
Cultivation between the rows	44				15		15		15				
Mechanized harvesting of inflorescences	52						26	26					
Harvest transportation	161						81	81					
Processing services	343						171	171					
IV. The cost of manual operations	**224**	**0**	**0**	**0**	**2**	**60**	**51**	**111**	**0**	**0**	**0**	**0**	**0**
Weeding between the rows (2 times)	120					60		60					
Harvest support	56						28	28					
Loading and unloading the crop	45						23	23					
Loading and unloading of fertilizers	2				2								
V. Other costs and fees	**686**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**150**	**0**
Plantation wear and tear (not allocated to	531												
Rent land payment	150											150	
Land tax	6						6						
VI. Contingency expenses	**105**	**0**	**0**	**0**	**26**	**7**	**18**	**19**	**1**	**0**	**0**	**8**	**0**
VII. Variable + fixed consumptions	**2,212**	**0**	**0**	**2**	**537**	**152**	**376**	**409**	**17**	**2**	**2**	**159**	**0**
VIII: Gross profit (gross margin) (I-VII)	**1,556**												
IX: Profitability (VIII / VII*100%)	**70**												
Final cash flow	**X**	**0**	**0**	**-2**	**-538**	**-691**	**-**	**-1,476**	**-1,492**	**-1,494**	**2,272**	**2,263**	**2,263**

Source: Calculations of the group of authors [4, 5, 6,7, 8, 9, 10].
Note: Depreciation is not calculated in the cash flow, because the money broken down to depreciation remains in the enterprise and is calculated for accounting purposes (calculating profitability).

Table 4. Analysis of the economic efficiency of industrial lavender cultivation, the Chişineovscaia 90 variety in a conventional system

#	The main economic indicators	Calculation formula	MU	Calculation data (area 1 hectare)
1	The investment budget for the establishment of the	Investment budget	Euro	6,946.97
2	Subsidies possible to obtain	Subsidy regulation	Euro	500.00
3	Sales income	Budget per fructification	Euro	3,767.50
4	Cost of sales	Budget per fructification	Euro	2,211.99
5	Annual gross profit	3-4	Euro	1,555.51
6	Profitability of revenues (revenues obtained per 1 leu of	3 / 4 * 100%	%	170.32
7	Economic profitability (profits obtained per 1 leu of	5 / 4 * 100%	%	70.32
8	Cash flow at the end of the year	Budget per fruit	Euro	2,262.57
9	Unit cost	4 / harvest per hectare	Euro / kg	32.29
10	Average selling price	3 / harvest per hectare	Euro / kg	55.00
11	Gross profit (gross margin) of production	10-9	Euro / kg	22.71
12	Investment recovery period (years of fruition)	(1-2) / 5	ani	4.14
13	Investment recovery period (years after planting)	12 + 3 years vegetation period	ani	7.14

Source: Calculations of the group of authors [9, 1, 2, 3].

Table 5. Cumulative economic indices for industrial lavender cultivation, Chişineovscaia 90 variety for a conventional production cycle (area 1 ha)

Specification	Land preparation and planting	Caring for the plantation until it bears fruit		Exploitation of the plantation - the period in full fruition									
Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
Plantation productivity	0%	15%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Investment costs	-4,452	-1,436	-1,059										
Annual cost of sales		-98	-328	-1,681	-1,681	-1,681	-1,681	-1,681	-1,681	-1,681	-1,681	-1,681	-1,681
Annual sales revenue	0	565	1,884	3,768	3,768	3,768	3,768	3,768	3,768	3,768	3,768	3,768	3,768
Annual gross profit (gross margin)	-4.452	-970	497	2,086	2,086	2,086	2,086	2,086	2,086	2.086	2,086	2,086	2,086
Subsidies	500												
Cumulative cost of sales	4,452	5,987	7,374	9,055	10,737	12,418	14,099	15,781	17,462	19,144	20,825	22,507	24,188
Cumulative sales revenue	500	1,065	2,949	6,716	10,484	14,251	18,019	21,786	25,554	29,321	33,089	36,856	40,624
Cumulative gross profit (gross margin)	-3,952	-4,922	-4,425	-2,339	-253	1,833	3,919	6,006	8,092	10,178	12,264	14,350	16,436

Source: Calculations of the group of authors.

The culture of conventional lavender of the Chișineovscaia 90 variety allows farmers to record high economic efficiency results, namely: the economic return is 70.3% for the conventional farming system. The average commercial addition to the essential oil is 22.71 Euro/kg, which is beneficial for farmers and for diversifying income sources in rural areas. The cumulative information of the main economic indices in the cultivation of industrial lavender, the Chișineovscaia 90 variety for a full cycle of conventional production are presented in Table 5.

The cumulative profit generated in the conventional industrial lavender culture amounts to 747,015 Euros for a production cycle (13 years a cycle, including 10 years of full fruiting). Therefore, the cultivation of industrial lavender of the Chișineovscaia 90 variety in a conventional system can be recommended to farmers who have relatively small areas and who can ensure optimal conditions for the implementation of modern lavender cultivation technologies in a conventional circuit.

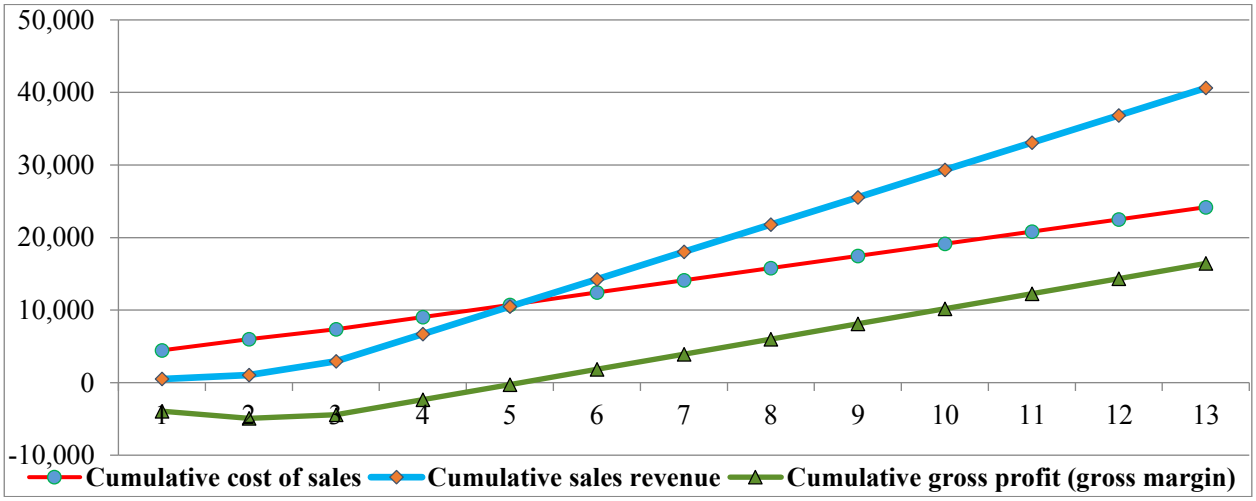

Fig. 1. The evolution of the cumulative economic indices for the cultivation of industrial lavender Chișineovscaia 90 variety for a conventional production cycle (area 1 ha)
Source: Calculations of the group of authors.

The culture of industrial lavender variety Chișineovscaia 90 in the conventional system has a high level of economic efficiency and is advantageous for implementation in agricultural holdings in rural areas of the Republic of Moldova.

CONCLUSIONS

Currently, there is an acute lack of complex / practical / applied information for agricultural producers regarding the efficient and sustainable development of businesses with hetero-oleaginous crops, the modernization of raw material production and processing technologies, the marketing of essential oil, the creation of added value, the ecological system of production and processing, the practical management of the operational management of the business, the competitiveness of the products and the enterprise to ensure the markets.

Public institutions, associations and donors must focus assistance on improvement of the existing framework, which would boost the development of the hetero-oleaginous crops sector (special for lavender) and support this sector in a much more focused / determined way, as it is one of perspective, with enormous unexplored possibilities both economically, social and ecological.

Cultivation of hetero-oleaginous plants for the Republic of Moldova offers farmers opportunities to diversify sources of income and presents a series of advantages:

-Essential oil is obtained from lavender, sought after in the E.U. / USA for industry, food, pharmaceutical, cosmetic, light, etc.;

-Crops with application in industry are promoted (technical plants, hetero-oleaginous plants);
-Competitive products are ensured in terms of quality, with direct reference to consumer protection;
-Establish business relationships between domestic and foreign producers and processors;
-Lavender culture is mechanized and does not require considerable investment;
-Businesses with hetero-oleaginous crops are practiced by small and medium farmers, which is important for providing them with alternatives to income;
-Lavender can also be cultivated in an ecological system and the average purchase price of the essential oil is 20-35% higher if they are certified by international certification bodies;
-Hetero-oleaginous crops are crops with a high level of profitability and allow for much more efficient use of production factors (land, fixed assets, etc.).
The production of hetero-oleaginous crops in an ecological system offers some advantages and is recommended for small farmers for implementation based on the following considerations:
-The cultivation of hetero-oleaginous crops is favored by the pedo-climatic conditions in the given region.
-Both on the domestic and European markets, demand is on the rise.
-The yield / profitability of these crops is very high! This means more money for entrepreneurs.
-The initial investment is small compared to the average profit obtained.

REFERENCES

[1]Balan, I., 2021, Calculation of unitary cost of the products from the fruit trees plantations In: Fiscal Monitor FISC.MD (Calcularea costului unitar al produselor plantațiilor pomicole. În: Monitorul Fiscal FISC.MD). Chișinău, 2021, no. 6 (69), pp. 11-15.
[2]Balan, I., 2005, Regarding the distribution of the common consumptions related to intercalated crops and the improvement of the current method for forecasting fertilizers in fruit-tree culture (Cu privire la repartizarea consumurilor comune aferente culturilor intercalate şi perfecţionarea metodei pronosticării curente a îngrăşămintelor în pomicultură. In: Economica, ASEM, Chişinău, 2005, no. 1, pp. 79-81.
[3]Balan, I., 2005, The technological peculiarities in fruit-tree culture and their influence on the consumptions accounting (Particularităţiletehnologiceînpomiculturăşiinfluenţaace storaasupracontabilităţiiconsumurilor). In: Economica, ASEM, Chişinău, 2005, no. 2, pp. 87-89.
[4]Zbanca, A., Melnic, V., 2020, Analysis of the opportunities for development of the sector of etero-oleaginous plants in the Republic of Moldova (Analiza oportunităților de dezvoltare a sectorului plantelor etero-oleaginoase în Republica Moldova), In: JurnalagricolAgroexpert. Chișinău, November 2020, No.3, pp. 50-57.
[5]Zbanca, A., Melnic, V., Negritu, G., 2020, Analysis of investments and their rationale in the sector of etero-oleaginous plants in the Republic of Moldova (Analiza investițiilor și argumentarea lor în sectorul plantelor etero-oleaginoase în Republica Moldova), In: Jurnal agricol Lider-Agro. Chișinău, no. 10.
[6]Zbanca, A., Negritu, G., Melnic, V., 2022, Feasibility and development of the sector of etero-oleaginous plants in the Republic of Moldova in the context of the adhesion to the EU (Fezabilitatea și dezvoltarea sectorului de plante etero-oleaginoase în Republica Moldova în contextul aderării la UE), International Round Table - EU-Moldova Association Agreement: Steps Forseen, 12-13 October 2022, The Erasmus+ Programme of the European Union, Jean Monnet, within the project No. 610667-EPP-1-2019-1-MD-EPPJMO-PROJECT. "EUAGRO: Fostering European Integration of the Republic of Moldova with the specific accent on the agriculture sector", Chisinau, Moldova, 2022.
[7]Zbanca, A., Melnic, V., Stratan, D., 2022, Technologies and innovations in the sector of aromatic and medicinal plants in the context of climate change: Guide The Consolidated Unit for the Implementation of IFAD (UCIP IFAD Programmes (Tehnologii și inovații în sectorul plantelor aromatice și medicinale în contextul schimbărilor climatice: Ghid / Unitatea Consolidată pentru Implementarea Programelor IFAD (UCIP IFAD), Print-Caro Publishing House, Chișinău, 82 p.
[8]Zbanca, A., Melnic, V., Stratan, D., The xeport of the etero-oleaginous Euros in the Republic of Moldova: A Practical Guide/The Consolidated Unit for the Implementation of IFAD (UCIP IFAD Programmes (Exportul Eurourilor etero-oleaginoase în Republica Moldova: Ghid practic / Unitatea Consolidată pentru Implementarea Programelor IFAD (UCIP IFAD), Print-Caro, Publishing House, Chișinău, 2022,74 p.
[9]Zbanca, A., Goncearіuc, M., Panuta, S., 2019, Prcatical guide for lavander cultivation and business administration, Guide (Ghid practic privind cultivarea lavandei și administrarea afacerii, Ghid), Chișinău, 124 p.
[10]Zbanca, A., Negritu, Gh., The development of the value chain for the horticultural sector in the Republic of Moldova (Dezvoltarea lanțului valoric pentru

sectorul horticol din Republica Moldova), In: Scientific Papers, Conference, 85 years at Agrarian State University of Moldova, Faculty of Economics 2018.
[11]Zbanca, A., Negritu, Gh., Dobrovolschi, L., Gherasin, I., 2020, Development of the walnut sector in the Republic of Moldova, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol.20(1), 639-646. https://managementjournal.usamv.ro/pdf/vol.20_1/Art79.pdf, Accessed on January 5, 2023.
[12]Zbanca, A., Panuta, S., Morei, V., Baltag, G., 2017, High value agriculture in the Republic of Moldova, comparative analysis and feasibility of investments, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol.17(1), 473-478, https://managementjournal.usamv.ro/pdf/vol.17_1/Art69.pdf, Accessed on January 5, 2023.
[13]Zbanca, A., Sarban, V., 2021, Investment management of planting cherry plantations, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol.21(1), 825-830.