

CALCULATION OF ECONOMIC EFFICIENCY IN GROWING ARTICHOKE IN 2010 AT JUCU, CLUJ

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Abstract. In this paper we present results of the research made in 2010 on the effectiveness of soil fertilization with organic fertilizers and value cultivars tested, in terms of production.

Experiences had been located in the experimental field of Jucu, CJ. We took four cultivation of artichokes in the study: "Unirea", "Violet", "Agrosel 656" and "Chişinău". They were placed in the experimental field of Jucu - Cluj, made in two densities (3.57 pl/sqm and 2.38 pl/sqm) and three levels of fertilization (unfertilized, fertilized with 20 t/ha farmyard manure and 40 t/ha manure in the fall plowing). The sowing was performed manually in the artichokes nests (2-3 seeds/nest). The experience was located in four repetitions of 10 sqm. Biometric measurements were conducted at 10 plants in each plot experimental environments. Harvesting has been done manually with a sickle.

Economic efficiency was established by calculating the following economic indicators: production per hectare achieved, value of trading, average price recovery, cost of production, cost per unit of product, taxable profit, net income + grants, rate is expressed as%, net profit + subsidy rate, gross profit, rate of return.

From the cultivars studied, the highest net profit was obtained in cultivation Unirea (9,690 lei/ha), followed by far by the Violet (7,360 lei/ha). The main driver of profit was due to the production of plant material.

From the three agrofunds, the ones fertilized with 40 t/ha manure turned out to be the most economically efficient of all cultivars due to higher production per hectare.

Introduction

Artichoke is a biennial herbaceous plant, plant dual use - food and medicine, with large leaves, pinnate sectors, sometimes thorny.

Artichoke is a plant of Mediterranean origin LEAF - phytotherapeutic purposes - or floral buds - on food, as vegetables. Folium Cynarae stimulate antitoxic function of liver, biliary excretion of cholesterol and diuresis (L.S. Muntean et al., 2007). As vegetables, artichokes is very much appreciated, especially in Western Europe.

Legend says that artichokes appeared as a very beautiful woman who upset, but the gods and was turned into a "bramble".

In this paper we present results obtained in growing artichokes in the experimental field at Jucu - Cluj, in 2010.

Materials and methods

Experiences in 2010 were located in experimental field at Jucu, Cluj. Artichokes have been grown in several versions with four repetitions each of 10 sqm. Experimental variants were three factors: growing, density and agrofond (fertilization).

To establish artichoke cultivar that is most productive in climatic conditions from Jucu we tested four varieties of artichokes: Union (Romanian varieties), Purple (Italian variety), Agrosel 656 (commercial cultivar) and Moldova (Rep. of cultivar. USA). The four crop were grown at a distance of 70 cm between rows and between plants per row at two different distances: 40 cm, variant called D40 (ie 35 700 plants/ha) and 60 cm, D60 (23,800 plants/ha). The four cultivation at the two densities have been grown on three plots with different fertilization namely: F0 - unfertilized, F20 - fertilized with 20 t/ha manure Gajdos - and F40 - fertilized with 40 t/ha.

Leaf collection was performed manually in two stages (July 15 and September 30), production was weighed on each experimental plot was reported per hectare.

The artichoke cultivars have performed a series of biometric measurements such as leaf production and drying efficiency.

The average yield was drying 5/1.

Economic efficiency indicators were calculated to reveal the effectiveness of soil fertilization with organic fertilizers and value cultivars tested, in terms of production.

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Results and discussion

Economic efficiency was monitored in all four crops, for the three variants of fertilization. Economic efficiency calculation was performed using artichoke yields obtained in 2010 in the three agrofunds (F0, F20 and F40).

Leaf collection was performed manually in two stages (July 15 and September 30), production was weighed on each experimental plot was reported per hectare.

Subsidies were granted under GD 1017/2010.10.06. Single area payments were € 80.36 and complementary national payments were € 50.64. Payments are made in lei, the European Central Bank exchange rate published in the Official Journal of the European Union 4.2718.

Selling price of a kilogram of dried leaves was established as an average market prices, taking into account the price offered by Plafar SA and other companies to take over the plant raw material

Artichokes growing economic efficiency indicators per unit of product (2010) are presented in Table 1.

The largest share of total expenditure is the cost of temporary labor (day workers) above 70%, following raw materials and materials costs.

With increasing fertilizer production increases leading to a decrease in cost per unit of product.

If cultivar Unirea cost per unit of output fell from 3.07 lei/kg F0 to 2.67 lei/kg F40. The lowest cost per unit of product was obtained in cultivar Unirea to F40 of 2.67 lei/kg, followed by Violet with 2.88 lei/kg at the same fertilization.

The largest single profit was obtained after fertilization with 40 t/ha manure all cultivars.

Table 1

Indicators regarding the economic efficiency in growing artichokes,
per unit of product (Jucu, 2010)

Cultivar	Fertilization	Sale price (lei/kg)	Cost per unit of product (lei/kg)	Unit profit (lei/kg)
Unirea	Unfertilized	5.5	3.07	2.43
	Fertilized with 20 t/ha manure		2.84	2.66
	Fertilized with 40 t/ha manure		2.67	2.83
Violet	Unfertilized		3.22	2.28
	Fertilized with 20 t/ha manure		3.05	2.45
	Fertilized with 40 t/ha manure		2.88	2.62
Agrosel 656	Unfertilized		3.59	1.91
	Fertilized with 20 t/ha manure		3.17	2.33
	Fertilized with 40 t/ha manure		3.02	2.48
De Chișinău	Unfertilized		3.73	1.77
	Fertilized with 20 t/ha manure		3.40	2.10
	Fertilized with 40 t/ha manure		3.36	2.14

Indicators of economic efficiency were made for the three agrofundus (F0, F20 and F40), the four cultivation of artichokes, 2010, is shown in Table 2.

If the variety Unirea, the higher yields were obtained from F0 version, with 870 kg/ha for F20 and 1,735 kg for F40 variant, which resulted in production values superior to that obtained from F0 with 4,785 lei for F20 and 8,543 lei/ha for F40. The F40 version, taxable income is higher with 6,309 lei/ha from F0, with a rate of return of 106.01 %, or for 100 lei spent is produced a taxable profit of 106.01 lei.

Violet variety yields obtained vary between 3,060 kg/ha and 4,075 kg/ha, which resulted in production values between 16,830 lei/ha and 22,413 lei/ha, depending on the variant of fertilization. The highest rate of return on taxable income was obtained from version F40 (90.73%), followed by F20 (80.59%) and F0 (70.62%).

For Agrosel cultivation, the largest taxable profit was obtained from F40 with 4,235 lei/ha higher than F0, with a rate of return of 81.91%, followed by F20, with 2,908 lei / ha higher than F0 and rate of return of 73.67%, or 100 lei spent to produce a taxable profit of 73.67 lei.

Lastly, for the cultivation of Chisinau we obtained the most production for version F40, higher by 515 kg/ha from F0 to F20 achieved a higher taxable profit 1,750 lei/ha for F0, with a rate of return of 61.82%. In contrast to F40, taxable income is higher with 1,917 lei/ha for F0 and a rate of return of 63.65%, or 100 lei spent to produce a taxable profit of 63.65 lei.

Table 2.

The indicators of economic efficiency in growing artichokes
(Jucu, 2010)

Cultivar	Fertilization	Production kg/ha	Production value lei/ha	Total expenses lei/ha	Profit		Return	
					Taxable lei/ha	Net + subsidy lei/ ha	Taxable profit %	Net profit + subsidy %
Unirea	F0	3,460	19,030	10,636	8,394	7,611	78.92	71.56
	F20	4,330	23,815	12,297	11,518	10,235	93.67	83.23
	F40	5,195	28,573	13,870	14,703	12,911	106.01	93.09
Violet	F0	3,060	16,830	9,864	6,966	6,411	70.62	64.99
	F20	3,530	19,415	10,751	8,664	7,838	80.59	72.90
	F40	4,075	22,413	11,751	10,662	9,516	90.73	80.98
Agrosel 656	F0	2,390	13,145	8,576	4,569	4,398	53.28	51.28
	F20	3,205	17,628	10,150	7,478	6,842	73.67	67.41
	F40	3,555	19,553	10,749	8,804	7,955	81.91	74.01
De Chişinău	F0	2,215	12,183	8,260	3,923	3,855	47.49	46.67
	F20	2,700	14,850	9,177	5,673	5,325	61.82	58.03
	F40	2,730	15,015	9,175	5,840	5,466	63.65	59.57
Average cultivars	F0	2,781	15,297	9,334	5,963	5,569	63.88	59.66
	F20	3,441	18,927	10,594	8,333	7,560	78.66	71.36
	F40	3,889	21,389	11,386	10,003	8,963	87.85	78.72

In Figure 1. situation of profit is given to the cultivation of artichokes, 2010. The greatest net profit was obtained from the variety Unirea (9,690 lei/ha), followed by Violet (7,360 lei/ha), Agrosel 656 (5,840 lei/ha) and Chisinau (4,320 lei/ha).

After experience and use of production can be obtained a SWOT analysis (Table 3) artichokes in organic cultivation.

The price expressed in the exploitation of artichoke leaves production is conventional, although the cultivation was done by ecological principles. The price for the production of organic calendula would be min. 30% higher, so that net profit would be appropriately higher. The Ministry of Agriculture in our country gives organic medicinal herbs growers, in 2011, grants of 270 € per hectare.

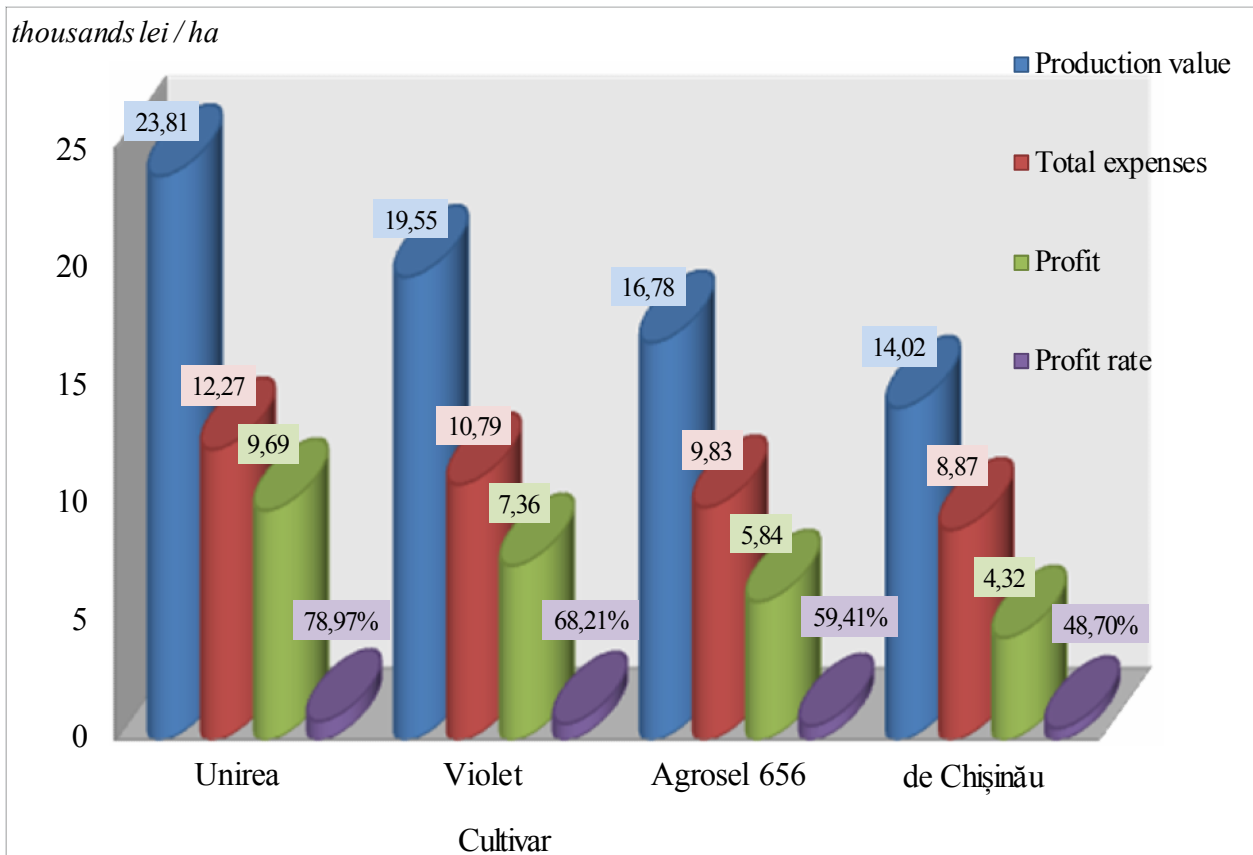


Fig. 1. The situation of profit from growing artichokes (Jucu, 2010)

Table 3

SWOT analysis of growing artichokes

<p>S/ Strengths:</p> <ul style="list-style-type: none"> - The product is particularly useful for producing pharmaceutical liver disease; - Helps maintain a clean environment as an ecological culture; - Establishment culture can be mechanized with low costs; - Opportunity for export; - Providing grants; - High productivity per hectare compared to other herbs grown. 	<p>W/ Weaknesses:</p> <ul style="list-style-type: none"> - Culture is demanding temperature. Winter lasts not only protected field. - Seed production in our area is difficult; - Too much of this product may be surplus to local needs
<p>O/ Opportunities:</p> <ul style="list-style-type: none"> - A market in expansion; - Reduced competition in the area (county Cluj), practically non-existent; - State subsidies. 	<p>T/ Threats:</p> <ul style="list-style-type: none"> - Implementation of new standards increased production costs.

Conclusions

Productions, 2010, of dried leaves were higher for Unirea cultivars (4,328 kg/ha) and Violet (3,555 kg/ha).

The amount of expenditure to the establishment, maintenance and harvesting artichokes, weight is the collection, with over 70% of total expenses.

Of the studied cultivars, the largest net profit (2010) is obtained from Unirea (9,690 lei), followed by the Violet with an average net profit of 7,360 lei, due to high production;

Of the three agrofunds, manure fertilizing with 40 t/ha turns out to be the most efficient in economic terms, to all of the cultivars.

References

Muntean, L.S., M. Tămaș, S. Muntean, L. Muntean, M.M. Duda, D.I. Vârban, S. Florian (2007). *Tratat de plante medicinale cultivate și spontane*, Ed. Risoprint Cluj-Napoca, 928 p, ISBN 978-973-751-463-9.

*** HG 1017/6.10.2010, Hotărâre privind aprobarea pe anul 2010 a cuantumului plăților directe unice pe suprafață, a plăților naționale directe complementare și a plăților separate pentru zahăr, care se acordă în agricultură în sector vegetal, publicată în MO 693/ 15.10.2010.