

## FEASIBILITY OF INVESTMENT IN CHERRY ORCHARD

Andrei ZBANCĂ<sup>1</sup>, Ghenadie NEGRITU<sup>1</sup>, Dorin BADIU<sup>2</sup>

<sup>1</sup>The State Agricultural University of Moldova, 44 Mircești, 2049, Chisinau, Republic of Moldova, Phone: +373 22 432 432, Fax: +373 22 312 276, E-mail: andzbanca@yahoo.com; negritu ghenadie@gmail.com

<sup>2</sup>University of Agricultural Science and Veterinary Medicine, Cluj-Napoca, 3-5 Mănăștur Street, Cluj-Napoca 400372, Romania, E-mail: dorin.badiu@usamvcluj.ro

*Corresponding author:* andzbanca@yahoo.com

### Abstract

*The main purpose of this paper is to correctly determine the investments required to establish cherry orchard, as well as to point out the best option to ensure the quality, productivity and competitiveness of the relevant products. The feasibility of investments for planting cherry orchards is considered according to the following method: preparation of investment budgets for planting and maintenance of cherry orchards before fructification for three technologies of fruit cultivation (traditional, intensive and super-intensive), the budget for the cherry orchard during the fructification period, and the comparison of the obtained results of calculation. The traditional orchard technology is more extensive, easier to implement, needs least investments per hectare and has lower economic effects, the intensive technology needs large investments per hectare and, therefore, allows obtaining more advantageous economic results, while the super-intensive technology is the most expensive, implies the greatest investments per hectare, and allows obtaining the best economic results. Given the above-listed findings, it may be concluded that intensive orchards allow obtaining cherries of homogenous quality, have a high productivity per hectare and at lower costs.*

**Keywords:** *cherry orchards, competitiveness, feasibility investments, income and expenditure budget, productivity, profit, return of investment, technology*

### INTRODUCTION

The globalization of the world economy and the technical – scientific progress provides new possibilities for increasing the efficiency of more levels of the agriculture. The integration objective of the Republic of Moldova in the international economic system as a competitive partner imposes a qualitative change of the actual situation within the agro-food sector. For Moldova, the achievement of this task can be reached through prior orientation towards the production and export of high value agro-food products, for which there are profitable and modern markets.

Under market economy conditions, agricultural entrepreneurs should analyze in detail the start-up of a business to determine correctly the implementation of business and the investment amount. The investment budget during planting and maintenance of the cherry orchard before fructification should be analyzed from the following points of view:

-The most important aspect is whether the selected technology allows ensuring **quality,**

**productivity and competitive price** during fruit production. Only the high quality and productivity of cherries will make our business competitive and will facilitate access of our products to strategic fruit markets. [1]

-The amount of necessary investments and return on investment in the shortest time.

-An important aspect is the optimal use of production factors in the enterprise.

These are the most important aspects which should be taken into consideration when planting cherry orchards and, to ensure correct decision making, the farmer should avail of technological and specific economic information to take right decision.

### MATERIALS AND METHODS

As materials for analysis and research we considered the Statistical Yearbooks of the Republic of Moldova, the data offered by the Ministry of Agriculture and Food Industry regarding the developments in the agricultural sector and, particularly, high value agriculture, the data collected from agricultural enterprises

dealing in cherry production by applying various cultivation technologies. To analyze and substantiate the feasibility of investments for planting cherry orchards, these materials were considered according to the following method: preparation of investment budgets for planting and maintenance of cherry orchards before fructification for three technologies of fruit cultivation (traditional, intensive and super-intensive), the budget for the cherry orchard during the fructification period, comparison of the obtained results of calculation, and formulation of final conclusions on the analyzed issue – feasibility of investments. [2] [3]

On the basis of calculations, it was established that the intensive technology of cherry cultivation is the best one for agricultural entrepreneurs, as it offered real opportunities to compete with fruits produced on regional markets in terms of price and quality.

## RESULTS AND DISCUSSIONS

Further we are going to present economic information for the made investments in planting 1 ha of cherry orchard using three technologies: traditional (rootstock Mahaleb),

intensive (rootstock Maxima 14) and super-intensive (rootstock Gisela 6).

An important factor in planting a cherry orchard is the selection of the field and namely: it is possible to plant where there are minimum 1500 hours of sunshine, 36 degrees of global temperature, 9-11,5 degrees of average temperature and over 600 mm precipitations; permeable in order to avoid water ponding; excluded from planting fields excessively wet and without drainage as well as those with phreatic level under 1,5 m; the soil should have neutral reaction, weak acid or weak alkaline; the fields should be exposed to sun, south exposition, S-E or S-W, avoiding northern expositions.

In the table below you may find a comparative analysis of differences between technologies of cherry cultivation that the entrepreneur should know in order to select the most optimal and efficient method when starting up a private business.

The investment budget for planting the cherry orchard is a financial tool through which the expenditures and necessary financial resources for a certain period of time are forecasted.

Table 1. Analysis of technical indicators in cherry orchards cultivated according to different technologies

Specification	MU	Cultivation technologies of cherries		
		Traditional variant (Mahaleb)	Intensive variant (Maxima 14)	Super-intensive variant (Gisela 6)
Planting scheme	m	5 X 4	5 X 3	4 X 2
Number of trees per hectare	trees	500	667	1,250
Average harvest that may be obtained	t/ha	7.0	12.0	16.3
Time for return on investment (per harvest)	year per harvest	1.12	0.92	1.39
Time for return on investment since plantation	years	7.12	5.92	6.39
Number of years upon fructification	years	6	5	5
Period of use	years	25	20	15

Source: Calculations made by authors



Photo 1. Traditional orchard (Mahaleb)



Photo 2. Intensive orchard (Maxima 14)



Photo 3. Super-intensive orchard (Gisela 6)

The presented calculations will serve as a basis for economic reasoning while selecting the optimal variant for planting an orchard.

In Table 2 you may find systematized information from investment budgets for planting and maintaining cherry orchards

before fructification using three variants of fruit production technologies: traditional (rootstock Mahaleb), intensive (rootstock Maxima 14) and super-intensive (rootstock Gisela 6).

Table 2.Total investments for planting and maintaining cherry orchards before fructification

Specification	Cultivation technologies of cherries					
	Traditional variant (Mahaleb)		Intensive variant (Maxima 14)		Super-intensive variant (Gisela 6)	
	Lei	%	Lei	%	Lei	%
I. Cost of production means	38,421	44.5	53,050	51.6	183,691	69.1
II. Mechanized services	19,024	22.1	20,366	19.8	27,275	10.3
III. Manual operations	13,125	15.2	13,467	13.1	24,083	9.1
IV. Contingencies (10%)	15,703	18.2	15,893	15.5	30,710	11.6
<b>TOTAL</b>	<b>86,273</b>	<b>100.0</b>	<b>102,775</b>	<b>100.0</b>	<b>265,758</b>	<b>100.0</b>

Source: Calculations made by authors

For planting 1 ha of traditional orchard, the farmer needs approx. 86.3 thousand lei. For 1 ha of intensive orchard – the investments will increase with 142% (investments are foreseen for drip irrigation system) in comparison to the traditional orchard and for 1 ha of super-intensive orchard – by 3.45 times (the investments for protective nets against hail are not taken into account).

If comparing the data from the table, we come to the following situation:

✚ The traditional variant is the less intensive (more extensive) easily achievable for farmers, requires lowest investments per ha and resultantly - the lowest economic results obtained from the operational activity;

✚ The intensive variant can be implemented by farmers but requires large investments per ha and as a result allows to get more advantageous economic indicators from the operational activity;

Table 3.Income and expenditure budgets for maintaining cherry orchards during fructification

Specification	Cultivation technologies of cherries					
	Traditional variant (Mahaleb)		Intensive variant (Maxima 14)		Super-intensive variant (Gisela 6)	
	Lei	%	Lei	%	Lei	%
I. Net sales	103,600	X	170,400	X	230,750	X
II. Cost of production means	5,805	17.5	7,425	14.3	9,945	12.1
III. Mechanized services	2,325	7.0	3,656	7.0	4,599	5.6
IV. Manual operations	17,182	51.9	25,732	49.5	34,999	42.4
V. Contingencies (10%)	7,768	23.5	15,175	29.2	32,924	39.9
VI. Variable consumption - total	33,081	100.0	51,988	100.0	82,468	100.0
VII. Gross profit - total	70,519	X	118,412	X	148,282	X

Source: Calculations made by authors

✚ The super-intensive variant is the most expensive for farmers, requires the highest investments per ha and as an outcome allows getting the best economic results. In the table above you may find systematize

information from income and expenditure budgets for maintaining cherry orchards during the fructification periods using three variants of fruit production technologies: traditional (rootstock Mahaleb), intensive

(rootstock Maxima 14) and super-intensive (rootstock Gisela 6)

If we compare the data from the table, we come to the following situation- the wholesale price of cherries is the same for all variants and makes in 16 lei/kg:

- ✚ The traditional variant allows getting a gross profit of 70,519 lei/ha, which is rather low if we use a performant agriculture;
- ✚ The intensive variant allows getting a gross profit of 118,412 lei/ha, which is advantageous for using a performant

agriculture;

- ✚ The super-intensive variant allows getting a gross profit of 148,282 lei/ha, which is the most advantageous for using a performant and sustainable agriculture.

In the table below you may find the analysis of the economic indicators for cultivating cherry orchards using three variants of fruit production technologies: traditional (rootstock Mahaleb), intensive (rootstock Maxima 14) and super-intensive (rootstock Gisela 6)

Table 4. Analysis of economic indicators in cherry orchards cultivated through different technologies

Specification	MU	Cultivation technologies of cherries		
		Traditional variant (Mahaleb)	Intensive variant (Maxima 14)	Super-intensive variant (Gisela 6)
Total investment amount	lei	86,273	122,775	297,758
Income from sales that may be obtained	lei	103,600	170,400	230,750
Direct consumption	lei	33,081	51,988	82,468
Gross profit	lei	70,519	118,412	148,282
Unit cost of production	lei/kg	4.73	4.33	5.07
Average selling price	lei/kg	16.00	16.00	16.00
Direct consumption per MDL 1 of income from sales	lei	0.295	0.271	0.317
Profitability	%	213.2	227.8	179.8

Source: Calculations made by authors

On the basis of economic calculations for planting a cherry orchard, the specialists recommend to entrepreneurs to apply intensive technologies for cherry cultivation (rootstock Maxima 14), because it allows to get the best results with less risks.

Despite of a high profitability of cherry orchards and high demand of these fruits, the expansion of cherry orchards is subject to high natural risks. According to the data from the Ministry of Agriculture and Food Industry, at present, the total area of cherry orchards in Moldova is about 2,6 thousand ha, whereof 2 thousand are in fructification and the average yield is 3,2 t/h (according to the data of the National Bureau of Statistics from Moldova).

## CONCLUSIONS

The commercialization of cherries is advantageous for entrepreneurs because they can get incomes from early sales need for

cash inflows in the enterprise cash flow and more efficient administration of the enterprises. The cherry fruits have a high demand from consumers being among the first fruits of the season with a good and stable price for the season.

Why intensive technology of cherry cultivation? The answer can be found in the following argues:

- The intensive and super-intensive orchards allow getting qualitative cherries (uniform size and quality and stable yields each year);
- The administration of intensive orchards is more efficient due to average form of the tree crown (dry pruning is easier as well as spraying, harvesting, etc.);
- The high productivity of cherries in intensive orchards allows to have unit costs of production ensuing competitiveness fact which is extremely important in competitive struggle on regional markets;
- The intensive technology is less expensive compared to the super-intensive and is a