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BENCHMARKING OF INVESTMENT IN CHERRY ORCHARD

Abstract

The main purpose of this paper is to determine correctly 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 cherrys of homogenous quality, have a high productivity per hectare and at lower costs.

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.
- 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.

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.

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.

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.

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	6,5	12,0	17,5
Time for return on investment (per harvest)	year per harvest	1,14	1,18	0,80
Time for return on investment since plantation	years	7,14	6,18	4,80
Number of years upon fructification	years	6	5	4
Period of use	years	25	20	15

Source: Calculations made by authors

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.

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

Photo 1. Traditional orchard
(Mahaleb)

Photo 2. Intensive orchard
(Maxima 14)

Photo 3. Super-intensive orchard
(Gisela 6)

In the table below 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	65.962	58,1%	143.143	78,9%	268.611	74,2%
II. Mechanized services	19.117	16,8%	33.000	18,2%	27.704	7,6%
III. Manual operations	17.500	15,4%	1.964	1,1%	32.360	8,9%
IV. Contingencies (10%)	10.984	9,7%	3.217	1,8%	33.473	9,2%
TOTAL	*113.564*	*100,0%*	*181.323*	*100,0%*	*362.148*	*100,0 %*

Source: Calculations made by authors

For planting 1 ha of traditional orchard, the farmer needs approx. 113.6 thousand lei. For 1 ha of intensive orchard – the investments will increase with 159.7% (investments are foreseen for drip irrigation system) in comparison to the traditional orchard and for 1 ha of super-intensive orchard – by 3.19 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:

- he 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;

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 92,760 lei/ha, which is rather low if we use a performant agriculture;
- The intensive variant allows getting a gross profit of 203,605 lei/ha, which is advantageous for using a performant agriculture;
- The super-intensive variant allows getting a gross profit of 395,275 lei/ha, which is the most advantageous for using a performant and sustainable agriculture.

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	132.600	X	276.000	X	504.000	X
II. Cost of production means	6.718	16,9%	7.598	10,5%	10.375	9,5%
III. Mechanized services	2.311	5,8%	3.310	4,6%	4.681	4,3%
IV. Manual operations	22.537	56,6%	35.310	48,8%	49.933	45,9%
V. Contingencies (10%)	8.274	20,8%	26.177	36,2%	43.737	40,2%
VI. Variable consumption - total	39.840	100,0%	72.395	100,0%	108.725	100,0 %
VII. Gross profit - total	*92.760*	*X*	*203.605*	*X*	*395.275*	*X*

Source: Calculations made by authors

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	113.564	254.711	410.148
Income from sales that may be obtained	lei	132.600	276.000	504.000
Direct consumption	lei	39.840	72.395	108.725
Gross profit	*lei*	*92.760*	*203.605*	*395.275*
Unit cost of production	*lei/kg*	*6,13*	*6,03*	*6,21*
Average selling price	lei/kg	16,00	16,00	16,00
Direct consumption per MDL 1 of income from sales	*lei*	*0,383*	*0,377*	*0,388*
Profitability	*%*	*232,8*	*281,2*	*363,6*

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 middle variant (average) in the area of cherry production;
- ✓ The intensive orchards benefit from substantial subsidies;
- ✓ Production factors in intensive orchards are used on a high level;
- ✓ The acquisition prices of cherries from the field will be high because they are among first fruits and the intensive orchards allow to have a high profitability level in these conditions.

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