TECHNICAL - ECONOMIC EVALUATIONS EXPERIMENTAL CASUISTRY STUDIED AT CORE WALNUT OIL

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ABSTRACT

In this paper was performed study regarding guide technical and economic evaluations for core walnut oil obtained by extraction with petroleum ether, in a industrial unit considering 240 working days/year. The economic efficiency relies on analytic and synthetic indicators that give a general view about the production process. These indicators are used in order to calculate the profit of the factory enterprise. Monitoring of plant resources are essential for the development of modern agricultural production. Biodiversity of plant resources in agriculture is a biological basis for assurance the quality of world food products, for creating new cultivars, through conventional crossing process or application of biotechnology. The values obtained were as follows: total costs (736215 Euros/year), total revenues (817800 Euros/year), profit (81585 Euros/year), profit rate (11.08%), product cost (73400.63 Euros) and production costs (1301 Euros/kg). The results of technical-economic calculations estimated have positive values, suggesting that processing technology is profitable, the costs being lower than revenues, and therefore can be recommended as a potential technology solution for recovery of core walnut.

Keywords: profit, revenue, technical-economic calculation, walnut oil

INTRODUCTION

Additional primary economic data were assimilated courtesy of processors in the industry, and classical calculation methodology benefited from the advice of specialists in the field concerned literature (APOSTU, 1984; FRUJA, 1994).

They were used to calculate synthetic indicators of economic activity to calculate the two categories of costs (CSÖSZ, 1997).

Direct costs   = Cd
Indirect costs = Ci
total expenses = Ct
Ct = Cd + Ci

The walnut is oleaginous fruit, which is very nutritious, recommended especially during cold season. The core walnut contains proteins, lipids, carbohydrates and cellulose and are rich in minerals like sodium, potassium, calcium, magnesium, chlorine, phosphorus, sulfur, iron, copper, zinc and iodine (RABRENOVIC et. al., 2008; SAVAGE, 2001). The core walnut is rich in vitamins C, B1, B2, B5, vitamin PP and carotene and has high caloric value of 630 calories/100 g. (RYAN, 2007). Sometimes walnut oil is rich in beneficial nutrients the body like fruit from which it was obtained, is prepared in households in the country, and was highly regarded for its anticholesterolice.

If producers want to maximize their profits nuts in this culture, may opt to processing walnuts, walnut oil for production or for producing different core-based specialties nuts. On average a liter of walnut oil in bulk, sold directly by producers at the price of 16-20 euro, so that in the store have a price of at least 3 times higher, as shown (http://www.driedfruits.ro/index.php?route=product/product&path=57&product_id=274).

Walnut cultivation is a successful business in which the investment is low and profits high. Given that these cultivars are very productive, revenues are even higher average production per hectare is six tons of nuts in the shell.

MATERIAL AND METHOD

Economic data and calculation methodology were provided by processors in the industry.

a) Direct costs

Table 1. Costs of raw material (MP)

Raw material	Quantity [kg/24h]	Raw material price [Euro/kg]	Total [Euro /24h]	number of working days/year	Value Euro/year
Core walnut	500	4	2 000	240	480 000

$MP_{core\ walnut} = 480.000$ Euro;

Table 2. Costs of auxiliary materials (MA)

Nr. crt.	Auxiliary materials	Price (Euro/an)
1.	Cold water	15 500
2.	Water for steam (softened)	4 000
3	Petroleum ether	20 500
	TOTAL (MA)	40 000

Costs of the equipment amortization (AU)
AU = 22 050 Euros
Costs of the building amortization (AC)
AC = 20 800 Euros
Costs of electric energy (E_e)
E_e = 3 765 Euros

b) Cost of personal
Costs of labour power (S_d) = 40 000 Euros
Indirect costs of the salary (S_i)
The indirect costs of the salary (S_i) represented 30% from the direct salary

$$S_i = \frac{30}{100} \cdot 40\ 000 = 0.3 \cdot 40\ 000 \qquad S_i = 12\ 000 \text{ Euros}$$

Supported costs from income (C_v)
The supported costs from income (C_v) represented 10% from the costs sum with the raw material (MP), the auxiliary materials (MA) and the direct salary (S_d):

$$C_{v\ core\ walnut} = \frac{10}{100} (MP + MA + S_d) = 0.1\ (480\ 000 + 40\ 000 + 40\ 000)$$

$C_{v\ core\ walnut} = 56\ 000$ Euros/year
Costs of interest (D)
The interest is 5% from costs of raw material (MP), from the auxiliary materials sums (MA) and the direct salary sums (S_d):

$$D_{core\ walnut} = \frac{5}{100} \cdot (MP + MA + S_d) = 0.05 \cdot (480\ 000 + 40\ 000 + 40\ 000)$$

$D_{\text{core walnut}}$ = 28 000 Euros/year

Other costs (A_c)

Represented 6% from costs of raw material (MP), from the auxiliary materials sums (MU) and the direct salary sums (S_d):

$$A_{c\,\text{core walnut}} = \frac{6}{100} \cdot (MP + MA + S_d) = 0.06 \cdot (480\,000+40\,000+40\,000)$$

$A_{c\,\text{core walnut}}$ = 33 600 Euros/year

The total costs (Ct)

The total costs represented the costs sums for raw material, for auxiliary materials, for the equipments amortization, the costs sums with electric energy, the direct and indirect salary, the suported costs sums for revenues, the costs sums of interested and other costs.

$C_{t\,\text{core walnut}} = MP + MA + AU + AC + E_e + S_d + S_i + C_v + D + A_c$

$C_{t\,\text{core walnut}}$ = 480 000 + 40 000 + 22 050 + 20 800 + 3 765 + 40 000 + 12 000 + 56 000 + 28 000 + 33 600

$C_{t\,\text{core walnut}}$ = 736 215 Euros/year

The total revenue (V)

The revenue resulted from the oil product sale of core walnut, followed by extraction operation.

Of 500 kg of ground core walnut and extracted with extraction efficiency of 47% were obtained 235 kg walnut oil.

500 kg core walnut --------- > 235 kg walnut oil

Income received the sale thereof, (240 working days of the sale price 14.5 Euro/kg) are:

$V_{\text{walnut oil}}$ = quantity kg · 240 working days · price

$V_{\text{walnut oil}}$ = 235 · 240 · 14.5 = Euros/year

$V_{\text{core walnut oil}}$ = 817 800 Euros/year

The profit (P)

The profit represented difference between total revenue and total cost:

$P = V - C_t$

$P_{\text{core walnut oil}}$ = 817 800 – 736.215; $P_{\text{core walnut oil}}$ = 81 585 Euros/year

The profit rate (R_p)

The profit rate is the proportion between the profit value and cost totals:

$R_p = P/C_t \cdot 100$ $R_{p\,\text{core walnut oil}}$ = 11.08%

The product revenue(V_p)

The product revenue represented proportion between profit value and revenue totals:

$V_p = P/V \cdot 100$ $V_{p\,\text{walnut oil}}$ = 9.97%

The product cost (C_p)

Represented percentage (V_p) by the total cost:

$C_p = V_p \cdot C_t$

C_p = 73 400.63 Euros

The production cost (C_{prod})
Represented proportion between the product cost and the product annual quantity:
$C_{prod} = C_p$ (the product cost)/M (product annual quantity)
$C_{prod} = 73\ 400.63/56\ 400$
$C_{prod} = 1\ 301$ Euros/kg
The product unit profit (P_p)
The product unit profit (P_p) represented proportion between profit value and product annual quantity: $P_p = P/M$; $P_p = 1\ 446$ Euros/kg

RESULTS

Table 3. Indicators of economic efficiency in processing core walnut oil

No.	Specification	Total amounts
1	Total costs (C_t)	736 215 Euros/year
2	Total revenues (V)	817 800 Euros/year
3	Profit (P)	81 585 Euros/year
4	The profit rate (R_p)	11.08%
5.	The production costs (C_{prod})	1 301 Euros/kg
6	Selling price	14.5 Euros/kg
7	The profit unit product (P_p)	1.446 Euros/kg

Of evaluation technical - economic and analysis key indicators of economic efficiency is remarkable high incomes core walnut oil processing (817 800 Euros/year) compared with total annual costs (736 215 Euros/year), and this has resulted in achieving a relatively high profit *(Table 3)*.
The results of technical-economic calculations estimated have positive values, suggesting that processing technology is profitable, the costs being lower than revenues, and therefore can be recommended as a potential technology solution for recovery of core walnut.

CONCLUSIONS

Technical-economic analysis is a basic tool outside all management functions, especially in the function prediction, planning, and outside the enterprise functions in the functions research – development, production, financial, accounting and commercial.
Technical-economic analysis is to study overall activity in the enterprise, both in terms of results and the way they have been using various inputs on which the company objectives and proposed them.

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