SHORT COMMUNICATIONS

ECONOMIC ANALYSIS OF A PRODUCTIVE UNIT OF FAMILY-BASED ORGANIC COFFEE

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ABSTRACT: The objective of this study was to analyze the economic analysis of a family-based organic coffee production unit, called Rossmann Grange, located in the municipality of Santa Maria de Jetibá/ES, Brazil, certified organic since 2001 using the records of cost and production for the period from 2006 to 2016. The following indicators were evaluated: total operational cost; net operating income; profit and cost ratio. The results obtained were: total operating cost of R $ 476.14/bag; net operating income of R$ 3,022.66/ha; index operating cost benefit of 1.27; and profitability of the invested capital of 26.53%.

Index terms: Economic viability, organic coffee growing, family farming.

ANÁLISE ECONÔMICA DE UMA UNIDADE PRODUTIVA DE CAFÉ ORGÂNICO DE BASE FAMILIAR

RESUMO: Objetivou-se realizar a análise econômica de uma unidade de produção de café orgânico de base familiar, denominada Sítio Rossmann, localizada no município de Santa Maria de Jetibá/ES, Brasil, certificada como orgânica desde o ano de 2001, utilizando os registros de custo e de produção do período de 2006 a 2016. Foram avaliados os seguintes indicadores: custo operacional total; receita líquida operacional; índice benefício custo e rentabilidade do capital. Os resultados obtidos foram: custo operacional total de R$ 476,14/saca; receita líquida operacional de R$ 3.022,66/ha; índice benefício custo operacional de 1,27; e rentabilidade do capital investido de 26,53%.

Termos para indexação: Viabilidade econômica, cafeicultura orgânica, gricultura familiar.

The production of the Arabica coffee (*Coffea arabica* L.), in the state of Espírito Santo, occupies over 150 thousand hectares in production in 48 municipalities, with 53 thousand families in the activity, generating around 150 thousand direct and indirect jobs. This is the main source of income in 80% of the rural properties that are located in cold and mountainous lands (INCAPER, 2017; SOUZA e GALEANO, 2017). Given this socioeconomic context, it is salutary to develop a professional management of resources for the success of the enterprises in search of sustainability of the activity.

In organic agriculture, it can be stated that one of the most discussed and controversial dimensions is the economic one, as these systems are often considered economically unviable, being remembered as low productivity and destined only for subsistence. Therefore, it is evident the necessity of studies that contribute to the elucidation of this controversy.

In this way, the objective of this work was to carry out the economic analysis of a family-based organic coffee (*Coffea arabica* L.) production unit, called Rossmann Grange, located in the municipality of Santa Maria de Jetibá/ES, at the geographic coordinates of 20º02'15 "S and 40º46 ', 55 "W, belonging to the Atlantic Forest biome. This unit is certified as organic, with an area of 17.1 ha, and has Arabica coffee as its main activity since the year 2001. It made available records of production costs for the period from 2006 to 2016, totaling a time horizon of 11 years.

The economic analysis was made based on the cost sheets provided by the farmer, which were adjusted to meet the calculation methodology adopted. All additional information was collected through interviews with the Rossmann family, from June 2016 to April 2018, covering the following topics: family and property group history; environmental aspects, land use and management of the production unit; composition of the revenue of the production unit, and the cost

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of production of organic coffee in raw grains; and challenges and perspectives pointed out by the farmer (farmer, wife, father and father of the farmer). The organic coffee, referred to in this study, is one that has undergone the process of conversion, certified as organic by a national certifier, by an audit, accredited in the Ministry of Agriculture, Livestock and Supply, as recommended by Federal Law number 10,831, of December 23rd, 2003, Regulatory Decree No. 6,323 of December 27th, 2007, in addition to specific Regulatory Instructions and additional regulations of the certifier.

In this study we worked with the methodology of the operational cost of production (MATSUNAGA et al, 1976), considering only the total operational cost (TOC). In addition to direct costs, the TOC accounts for the value of family labor and the value of depreciation. The total operating cost represents the cost incurred in the short term for the agricultural establishment to produce and to replenish its improvements and machinery in order to continue producing.

The following indicators were also selected for economic analysis: Productivity, Net operating income (NOI); Operating benefit/cost ratio (OBC); Profitability of the invested capital (%).

In order to update the sale price, the amount of R$ 570.00/bag (60 kg) was established, practiced by the farmer in 2016 for the raw coffee beans. The definition of the price by the farmer occurs because the farmer has a small roasting with organic certification.

The composition of the raw coffee production cost was the result of an average of 11 years of accounting records, being: the farmer services with 62%, followed by depreciation with 14%, inputs 11%, third-party services 10%, and others 3%. As it can be observed, the largest item of operational cost is the services, that is, those performed by the family. As the average operating cost of the research period was R$11,330.97 and of these 62% refers to the services, it is possible to estimate that R$7,025.20 is for the family as work income. The reduced participation of inputs (11%) and third-party services (10%) is a differential of the productive unit under study.

The sustainability of the property is reinforced by the productive diversification and the composition of the revenues obtained. In the period of the research, there was a loss of 50% of the coffee *in natura* participation and a 10 times increase of the processed coffee participation, being motivated by the professionalization of coffee processing and the positive return of the consumer market.

When we added the amount referring to the item family services, R$7,025.20 (62% of TOC), with net operating income, which was R$3,022.66 (see Table 1, below), the value of R$10,047.86 of family income per hectare obtained from the organic production of Arabica coffee is determined. The study area has 2.4ha of organic Arabica coffee, so it can be stated that by the end of one year the family income will be 2.28 monthly minimum wages, based on the minimum wage in force in 2016, last year calculated in the research. This revenue is equivalent to only 40% of the total revenues obtained from the production unit.

The property is certified as organic to produce coffee *in natura* and processed coffee. The increase in demand for the processed product obliges the farmer to make acquisitions outside the production unit, well above the market price, which reduces your margin of return. Reducing the share of coffee *in natura* in the composition of the recipe is one of the concerns of the farmer, because it is in the production itself that it achieves a greater economic return. The need for quality organic Arabica coffee, to be processed, forces the farmer to make acquisitions above the market price, reducing his margin of return. The goal of the farmer is to reach the average productivity of 40 bags/ha, which would reduce or even stop buying outside coffees to the production unit.

Table 1 shows the values obtained for the economic indicators of the unit studied.

As expected in consolidated organic systems, Table 1 reveals that the total operating cost (TOC) had few oscillations during the period surveyed, highlighting the year 2008, with R$12,780.58, which was 12.79% above of the average. The lowest TOC was identified in 2015, with a value of R$9,674.09/ha, or 14.62% below the average. The year 2010 had the second highest operating cost, which, added with the fact that it also obtained the lowest productivity in the period, thus generated the worst economic result of the 11 years considered, as will be shown later.

In a survey carried out by CONAB, from 2008 to 2016, in Venda Nova do Imigrante-ES, on Arabica coffee produced under a business regime, when considering operating costs, the producer suffered losses practically every year. In the years 2009, 2010, 2013 and 2014, the producer could not even cover the expenses of costing.

TABLE 1- Economic indicators of the Rossmann Grange, from 2006 to 2016

Period	Total operational cost		Productivity	Net operating income		Benefit/cost ratio	Profitability of the invested capital
(Years)	(R$/Bag)	(R$/ha)	(Bags/ha)	(R$/ha)	(R$/Bag)		(%)
2006	528.93	12.165.43	23.00	944.57	41.07	1.08	7.76
2007	515.89	10.833.63	21.00	1.136.37	54.11	1.10	10.49
2008	327.71	12.780.58	39.00	9.449.42	242.29	1.74	73.94
2009	560.53	10.089.50	18.00	170.50	9.47	1.02	1.69
2010	699.57	12.592.23	18.00	- 2.332.23	-129.57	0.81	-18.52
2011	508.62	11.698.16	23.00	1.411.84	61.38	1.12	12.07
2012	428.37	11.994.38	28.00	3.965.62	141.63	1.33	33.06
2013	522.50	10.711.26	20.50	973.74	47.50	1.09	9.09
2014	305.21	10.682.38	35.00	9.267.62	264.79	1.87	86.76
2015	471.91	9.674.09	20.50	2.010.91	98.09	1.21	20.79
2016	368.36	11.419.07	31.00	6.250.93	201.64	1.55	54.74
Average	**476.14**	**11.330.97**	**25.18**	**3.022.66**	**93.86**	**1.27**	**26.53**

Source: Elaborated by the author.

As for productivity in the study area, the average in the period (11 years) was 25.18 bags/ha, close to the average of the Central Serrana region of the ES, which was 26,70 bags/ha for conventional Arabica coffee, however, only obtained in the year 2016 (INCAPER, 2017a). The average productivity of the present study is 38.48% above the state average of 18.19bags/ha (average of 09 years - 2008 to 2016). Comparing with the national average of 22.73 bags (CONAB, 2016), from 2008 to 2016, it can be seen that the average obtained in this study was 10.82% higher.

In a similar study, in the region of Caparaó/ES, the average productivity of 20.3 bags/ha was obtained (SIQUEIRA, 2014). This productivity, an average of two years of production (2008 and 2009), was 24.04% lower than that identified in the study area, with an average of 11 years of production.

In another study, an average productivity of 22.74 bags/ha (CAIXETA, TEIXEIRA and SINGULANO FILHO, 2009) was identified in the Zona da Mata of Minas Gerais region for 2006, 10.73% lower than obtained in the study area.

The average unit NOI of the Rossmann Grange was R$93.86/bag, having in the years 2009 and 2010 bad results, especially 2010, with values of R$9.47 and - R$129.57, respectively, which were the years of lower productivity. However, these results were offset with excellent results in the years 2008 and 2014, with values of R$242.29 and R$264.79, respectively, as they were the years of higher productivity, which greatly reduced unit TOC and repercussions in the NOI.

The unit NOI identified in a similar study in Caparaó/ES, mentioned above (SIQUEIRA, 2014), was R$109.49 for the period 2008 and 2009. The value identified was 16.65% higher than the average obtained at the Rossmann Grange, however, it should be noted that only 2 years of production were analyzed, while the average of this Grange was 11 years.

The operating cost - average OBC index in the period was 1.27, which means that for each Real invested in the production of organic coffee there was a return of R$1.27, demonstrating the economic sustainability of the activity. The years of 2008 and 2014 presented the highest OBC values, respectively, 1.74 and 1.87, as they were the years of higher productivity, which reduced unit TOC. The year 2010 was the only one that presented value less than 1, that is, if the analysis were made only this year, the result would be the economic unfeasibility of the activity.

The OBC index identified in the Caparaó study was 1.43 for the period 2008 and 2009 (SIQUEIRA, 2014). In the Rossmann Grange, an OBC of 1.27 was identified, which refers, however,

to an average of 11 years, and it can be stated that the production of organic coffee in familiar bases is economically viable, since its OBC is above 1. In Caparaó, even with a higher OBC (1.43), the reduced study time (02 years) may not offer as much security in affirming economic viability.

At Rossmann's Grange, an average capital return of 26.53% was obtained, which indicates that investment in organic coffee production provided a return above what could be obtained in financial market applications. As a reference, we can mention the savings account, which in the period had an average yield of 7.45%.

The present study revealed that the family production of organic Arabica coffee was a sustainable and economically viable activity, during the eleven years investigated, highlighting the following requirements: low dependence on external inputs; use predominantly of hand work of the family; obtaining in the long term a competitive productivity with the average of the culture in the conventional system; work to aggregate value to the product, that may be through quality certification and/or processing; have a diversification of production, increasing the sources of income obtained, as well as having alternative strategies of access to markets, avoiding dependence on the commodity market. Finally, we must practice the strategic management of the production unit, based on the principles of agroecological science, without the adoption of models and packages, but with respect to the agroecosystem and to the human being.

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