

ORA-PRO-NÓBIS (*Pereskia Aculeata* Mill): PROFITABILITY ANALYSIS

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Abstract: Characterized as an unconventional food plant (UFP – PANC in Portuguese), with underutilization in Brazilian cuisine, but with great potential due to its dense nutritional composition in proteins, vitamins and minerals, the Ora-pro-nobis plant presents itself as an income alternative for small producers. rural. The objective of the research was to evaluate economic aspects arising from the production of Ora-pro-nobis in family farming. Methodologically, this is applied research, of an exploratory-descriptive nature, with a qualitative, bibliographic, documentary, non-participant approach, with non-probabilistic, intentional and convenience sampling. The scope of the research is limited to the sample composed of six Reference Units producing Ora-pro-nóbis. The results point out that this is a profitable economic activity with guaranteed sale of all production, presenting itself, therefore, as a viable income alternative for small plots of land.

Keywords: Unconventional Food Plants (UFP), Ora-Pro-Nóbis, Family Farming, Income Generation.

INTRODUCTION

Family farmers face difficulties to produce and sell their production, as well as to have a quality life in rural areas (BEZERRA et al, 2016). Part of this universe concerns job and income generation, food sovereignty and development aimed at finding solutions that provide profitability and social equity with respect to health and the environment.

Family agriculture is understood to be that developed in an area of up to four fiscal modules; with labor used in predominantly family economic activities and whose highest

percentage of income is obtained from economic activities carried out within the scope of the plot, as prescribed by Federal Law n. 11,326, of July 24, 2006. (BRASIL, 2006).

Family farming is responsible for approximately 70% of Brazilian food production and constitutes the economic base of 90% of Brazilian municipalities with up to 20,000 inhabitants, justifying the relevance of the research and the existing relationship with Food and Nutritional Security (SAN). (STROPARO, 2022; STROPARO et al., 2022; STROPARO, SOUZA, 2022; BRASIL, 2015; STROPARO, 2021; SOUZA, 2013)

Seeking ways of diversification, the cultivation of so-called non-conventional food plants (PANC) gains prominence and numerous initiatives to encourage production arise. PANC are defined as those plants with under-exploited potential to contribute to health and nutrition, income generation and environmental integrity. Its definition depends on geographic, social, economic and temporal aspects and includes a wide range of wild, traditional, indigenous and local foods. They are characterized as food plants, exotic or native, which are not easily recognized or accessible for purchase by a given population. (JACOB, 2020; PORDEUS, STROPARO, 2021).

With regard to PANC's, it appears that the lack of information on the part of the population regarding their nutritional and/or medicinal properties and method of preparation causes their consumption to be reduced. (POLETTI et al, 2019, STROPARO; SOUZA, 2022). An example of such an assertion is *Pereskia aculeata*, popularly known as ora-pro-nobis, rich in vitamins, fibers and minerals, whose nutritional composition stands out for its high concentration of protein, which is around 28% of dry matter, but is underused in Brazilian cuisine.

However, some initiatives for planting and marketing Ora-pro-nóbis are taking place in the State of Paraná, with the encouragement of state agencies such as the Ministry of Agriculture, Livestock and Supply (MAPA), Institute of Rural Development of Paraná (IDR), notably in the Municipality of Palmeira, Ponta Grossa region, where an agreement was signed between Embrapa Hortaliças, from the area of functional nutrition for the development of a production system that facilitates harvesting and increases crop productivity (EMBRAPA, 2016).

In this way, we have the context of the present research that analyzes the economic profitability of the production of ora-pro-nobis in the region of Palmeira, State of Paraná.

THEORETICAL FOUNDATION

Family farming

It was from the 1990s onwards that the context of family farming emerged, in the midst of two moments that had a relevant social and political impact on rural areas, mainly in the central-southern region. At first, in the political field, there is the initiative by rural social movements, led by rural unions linked to CONTAG (National Confederation of Agricultural Workers). Secondly, there is the affirmation of family farming in the midst of the Brazilian social and political scenario, where at this moment, due to the legitimacy of the State that lent it when creating in 1996, the PRONAF program (National Program for the Strengthening of Family Agriculture) (SCHNEIDER, 2003).

The use of the expression “Family farming” is still very recent in Brazil, equivalent expressions were used in official documents such as: “low-income agriculture”; “small production” and “subsistence agriculture” (SANTOS, 2016).

The main difficulties faced are identified, among them: the non-existent minimum price action, always variable action; market instability; climatic variations that directly affect productivity; high cost of labor; infrastructure and land tenure problems; strict environmental legislation. Such factors are seen as a limiting factor for agriculture and its production process, due to the instability of the sector, which means that the search for less vulnerable strategies, which present lower risks for the activities, is incessantly sought (REDIN, 2013).

The non-existent performance of a minimum price provides uncertainties inherent to agricultural activity, something that could circumvent this risk is to offer the producer conditions of predictability of product prices even during planting decisions, which can be carried out through public policies aimed at agriculture, such as, for example, the use of the Minimum Price Guarantee Program (PGPM), or by the market, using the Futures Market (MINEO, 2012).

Climatic variations cause instabilities in agriculture, many times the success of productions depends on nature. During the harvest, there are instabilities such as hail, excessive rainfall or droughts, which directly affect crops, taking into account the Agricultural Activity Guarantee Program (PROAGRO) which, despite having limitations because it does not cover all producers, can mitigate the losses, but only in the production of grains such as corn and beans (REDIN, 2013).

However, in the midst of numerous difficulties, it began to seek incentives and alternatives that provide means of increasing the advantages of rural areas, expanding the labor market and opting for the pursuit of cultural diversification.

Diversity is considered essential for survival and competitiveness, guaranteeing biodiversity, promoting the labor market, maintaining the population, creating wealth and new business opportunities. In the State of Paraná, there is a variety of cultures among them: sugar cane, corn, orange, cassava, castor beans, vegetables, medicinal plants such as chamomile, mint, melissa, Brazilian ginseng and seasonings such as chives and parsley (AGENCIA ESTADUAL DE NEWS, 2016).

Non-Conventional Food Plants (PANC)

In 2007, biologist Valdely Ferreira Kinupp, uses the term “PANC” when referring to all plants that have one or more edible parts, whether spontaneous or cultivated, native or exotic that are not included in our daily menu. (KINUPP, 2007, STROPARO, SOUZA, 2022; SOUZA et al 2020).

PANC'S are sometimes recognized as medicine, others as food and, occasionally, these interfaces overlap. (JENNINGS et al, 2015). Plants that have not yet been fully studied by the technical-scientific community and/or explored by society as a whole are characterized as PANCs, resulting in regional consumption and presenting difficulty of acceptance and consumption for other regions of the country (BRASIL, 2010).

According to Kinupp et al (2014) in Brazil there are approximately 5,000 species of PANC. Because they are spontaneous and easily sprout in backyards and vacant lots, these plants, if they are well known, can contribute to enriching the menu of the Brazilian population.

Farmers will be able to earn extra income by including the PANC in the sale at fairs in the city, contributing to the local economy and the livelihood of rural communities (STROPARO, SOUZA, 2022)

Ora-pro- nobis (*Pereskia Aculeata* MILL .)

The Ora-pro-nobis culture, second Madeira et al. (2016) is “called *pereskia aculeata* and has tropical America as its origin and diversity, including much of the Brazilian territory”. And for Kinupp (2008), “Ora-pro-nobis, which in Latin means “pray for us”, is a plant that belongs to the *Plantae kingdom, Magnoliopsida class* ”.

The cultivation of Ora-pro-nóbis, had its origin in the 17th century, along with the Gold Fever in Minas Gerais in the city of Sabará, in a period that did not produce any type of food. In the midst of so much misery and great fortunes, the consumption of little-known and thorny vegetables was chosen, with the consumption of Ora-pro-nobis entering the scene.

Known as “The meat of the poor”, it is found in the middle of the forests or restingas. It is a perennial, shrubby species, measuring around 4 meters in height, with long branches, simple, elliptical leaves, with flat blades and fleshy texture (MADEIRA et al. 2016).

The culture is perennial and once implanted it has a useful life of approximately 10 years. The number of plants per hectare is around 5 thousand, with bimonthly pruning. Harvesting 2,500 kg of green leaves per month results in around 312 kg of dry leaves with a ratio of 8 to 1.

Research points out that among the nutritional composition there is calcium, magnesium, vitamin A, vitamin B9, vitamin C, tryptophan, zinc, fiber, it has a great protein potential which makes the consumption of Ora-pro-nobis an important option for the combating malnutrition and increasing food sovereignty.

In this sense Oliveira et al (2019) investigated the profile of family farmers and the dietary techniques used in the preparation of the most consumed PANCs in the rural area of the municipality of Viçosa based on the identification of their habits and food cultures. It was concluded that the unconventional vegetables had excellent nutritional value and, specifically, ora-pro-nobis had a high content of iron, phosphorus, manganese, magnesium and calcium

RESEARCH METHODOLOGY

This research is classified as an applied research, exploratory-descriptive, with a qualitative and quantitative approach, bibliographical, documental, with non-probabilistic, intentional and convenience sampling, using observation techniques and structured interviews. (CRESWELL, 2007; COOPER; SCHINDLER, 2011; GRAY, 2012; MARTINS & THEÓPHILO, 2007).

The population is composed of twenty (20) family farmers from the Ponta Grossa/PR region, who produce ora-pro-nobis and the sample is restricted to six (06) local producers who were asked about aspects related to cultivation, management, sale and consumption of the plant. The sample was defined using the Network technique or intentional non-probabilistic sampling defined by Patton (1990) and Cotton (1996) as “Snow ball sampling”, which consists of indicating respondents by the sample actors themselves, through indications that allow the location of new contacts within the predetermined profile. The research instrument used was formatted in blocks in order to characterize the respondents, identify issues related to cultivation, management and income, as well as information on the form of processing and consumption. The data collection and processing process took place through the following

steps: i) initially, the farmers belonging to the Ora-pro-nobis cultivation implementation program were identified. ii) therefore, the research technique consisting of a questionnaire containing about 40 closed and open questions was used. iii) finally, the data were tabulated using Microsoft Excel software.

RESULTS AND DISCUSSIONS

On average, the number of members of each family unit surveyed is five people, activities related to culture are carried out by family labor and no employment relationships were found in the RU's surveyed.

Asked about “what reason led to cultivate Ora-pro-nóbis”, there is a preponderance of answers : extra income and full use of the cultivable area of the property.

Table 1 - Total Area and Area destined for Ora-Pro-Nóbis Culture

Producers	Total Property Area (ha)	Area dedicated to the Culture of Ora-Pro-Nobis (ha)
Producer 01	0	1 ha
Producer 02	0	0.5 ha
Producer 03	0	1 ha
Producer 04	0	2 ha
Producer 05	0	2 ha
Producer 06	4.8 ha	1.3 ha

Source: Research Data

It is verifiable in Table 1 the total area of each of the UR's object of study, as well as the occupation of the Ora-pro-nóbis culture, respectively. They are small plots of land that simultaneously plant vegetables, legumes, beans and corn for their own consumption.

Asked whether ora-pro-nobis cultivation is the family's main income, only one of the respondents said yes. For the others, there is income from other activities, notably dairy farming and the production of vegetables. Activities related to beans, tobacco, soy, corn, vegetables, beekeeping and pigs were identified.

A study carried out by Souza (2009) sought to investigate the potential of Ora-pro-nóbis in the diversification of family agricultural production, whose objective was to highlight,

based on data found in the literature, the economic and social importance of culture as an alternative for diversification in agriculture family, considering different markets, as well as subsidizing agronomic studies, currently scarce, that can expand its use and dissemination

The cultivation of Ora-pro-nóbis is recent in the researched UR's: 03 of the respondents affirm that they have cultivated it for 2 years, 01 of the respondents cultivates it for 2 and a half years, and the other two just over a year. In the question "Is the property that cultivates Ora-pro-nóbis their own, rented or others", all respondents state that they have their own property, they do not lease. With regard to the perception of costs and financial returns of the production cycle, table 2 can be seen below:

Table 2 - Revenues, Costs and Net Income

Producers	Quantity Feet	frequency Harvest	Harvested quantity (Kg)	Gross Revenue (R\$)	Total cost (R\$)	Net profit per cycle
Producer 01	4,705	did not perform	did not harvest	did not harvest	did not harvest	did not harvest
Producer 02	4705	75 days	150 kg	1600.00	900.00	700.00
Producer 03	4700	75 days	300kg	2,900.00	1,500.00	1,500.00
Producer 04	9400	40 days	950kg	36,000.00	5,000.00	13,000.00
Producer 05	9000	only in summer	2,000kg	18,000.00	4,000.00	9,500.00
Producer 06	5,000	70 days	750kg	13,500.00	3,000.00	3,000.00

Source: Research Data

Based on table 2 prepared from the questions in the applied questionnaire, it can be seen that the number of cultivated Ora-pro-nobis trees ranges from 4,700 to 9,000 trees. It was observed that the frequency of carrying out the harvest is carried out between 40 and 75 days, and may only occur once a year according to producer 05, who chose to carry out the harvest only in the summer season.

The quantities of harvest carried out are also verified. There was variation in the quantities produced, either by the area made available, or by the stage that the crop is in, as well as by the handling itself. Producer 01 has not carried out any harvest yet, as the plantation is in its initial stage. Producer 05 totaled 2000 kgs per hectare, having the highest productivity/ha. The explanation for the high productivity is explained by the frequency of harvesting (only once a year). It should be noted that producer 02, having a planting area corresponding to half a

hectare, harvested approximately 150 kg. Gross revenue is directly related to the amount harvested and ranged from R\$ 5,800 to R\$ 13,500.00. Products 01 did not perform any harvest and, therefore, the question does not apply. Producer 02 prefers not to expose perceived and/or spent financial values. Asked about the total cost per hectare of each harvest cycle per year, they say there is a variation of four thousand to five thousand reais. Regarding the net profit per hectare of each harvest cycle per year, the respondents claim to have a profit between R\$ 3,000.00 (every 70 days) and R\$ 13,000.00.

Considering that the crop occupies relatively small areas, profitability was high, as other crops, grown under the same conditions, would not bring the same return. Producer 05 obtained a profit of approximately 51.72%, producer 04, despite having the highest gross revenue, presented a profit of 36.11%. Producer 06 obtained a net profit of approximately 22.11%. The variation in profit percentages is justified by virtue of the management adopted, but even the lowest profitability observed (22.11%) is still much higher than other related activities, likely to be developed in a similar space, making the ora culture -pro-nobis presents itself as a viable alternative.

With regard to the ease and/or difficulties found in the flow of production, all respondents state that there is a guarantee of sale. Receipt of harvest deliveries takes, on average, thirty (30) days. With regard to production costs, 66.67% of respondents state that they use two people from the family unit and the other 33.33% use four people for the cultivation and management of the crop. Regarding the number of days devoted to ora-pro-nobis crop management, 50% of respondents work nineteen days and 33.33% work four days and 16.67% did not give an opinion.

When asked, does it have technical assistance, 04 said yes and 02 said no. In the question “how often does the technician in charge visit the production”, only the measurement of 04 of the respondents was considered, considering that 02 do not have assistance from the Technician, with 01 claiming to receive the visit every 15 days and 03 receiving the visit technician monthly.

Asked about the application of any pesticide in the cultivation of Ora-pro-nobis, the preponderance of answers was negative, with no application of any pesticide. Regarding the need to use PPE at some point during cultivation, the respondents stated that they used only leather gloves for handling due to the presence of thorns.

When asked “if there was any kind of incentive would expand the production of Ora-pro-nobis”, 04 say yes and 02 say no because it demands a lot of family labor leaving other activities aside.

Therefore, from the analyzed sample, it was possible to show signs that the Ora-pro-nóbis culture has a promising future ahead, seeking incentives that provide the inclusion and increase of production in more properties. It was also verified that this is a profitable economic activity with good prospects for increased consumption by the population.

FINAL CONSIDERATIONS

The quest for improved income and consequent quality of life for the rural population has been one of the greatest challenges for family farming. Respecting local characteristics, individualities, traditional knowledge, food security and, at the same time, proposing economically viable alternatives with few negative impacts on the environment is urgent.

With the aim of analyzing the profitability arising from the production of ora-pro-nobis, this research identified possibilities and difficulties inherent in the cultivation, management and resale of the plant cultivated in small plots of land and in substitution of the tobacco crop. The results show that there is a perspective of growth on the part of family farmers, the values perceived as net profit from the activity are around 33%, on average, which makes the crop economically viable.

It also presents as positive points the possibility of being implemented in small properties, there is little or no use of pesticides, use of family labor, technical assistance and certain sales. However, the use of Ora-pro-nobis is little known in Paraná by end consumers who are still not used to the taste or ways of using it in their day-to-day food.

There are state incentives for cultivation and sale, but there are no campaigns that encourage consumption showing nutritional characteristics and ways of use. Ora-pro-nóbis is a natural resource that is underutilized by farmers and consumers, and it is important to rescue tradition and traditional knowledge related to the plant, maintaining the principles of environmental sustainability, economic viability and social equity.

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