

Status of the family Farming Economic and knowledge Potential from a Sustainable Rural Development Perspective

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Abstract— *Technological innovations in agriculture have contributed to the increased production of food in order to meet an ever-increasing demand for agricultural products. On the other hand, agricultural modernization ended up being discriminatory because socio-cultural factors and the knowledge repertoires of rural populations have been neglected, this being caused by the homogenization of agricultural activities. With the recognition of the social-environmental problems caused by the technical paradigm of the Green Revolution, family farming is increasingly taking a prominent place in food production as well as its cultural heritage and knowledge of sustainable practices, necessary to restore the harmonious relationship between man and nature. The following question was raised as a research issue: What is the status of family farming in the literature and empirical research in relation to economic and knowledge potential in the context of sustainable rural development? In this sense, the objective was to identify the economic and knowledge potential of family farmers with a view to sustainable rural development. This is a case study involving 30 properties of family farmers, where interviews and observation on site were conducted. As a result, it was identified that in the socioeconomic factors the predominant status is negative, placing family farming in a critical situation in relation to its continuity, and the category of economic potential and knowledge has a predominant positive status. The maintenance of traditional knowledge transmitted from generation to generation contributes to this situation, however, it requires a greater interaction with technical-scientific knowledge in order to add value to economic activities.*

Keywords— *Family farming. Traditional knowledge. Rural development. Agricultural modernization. Nature.*

I. INTRODUCTION

With agricultural modernization, food production has intensified to meet an ever-increasing demand. The production system adopted was based on the premise of 'Fordism,' which sought to standardize agricultural activities, focused on large-scale production.

The paradigm of industrialization extrapolated the boundaries between the rural and urban field, significantly changing the mode of production in rural areas. According to Oliveira, Almeida & Santos Silva (2011, p. 66), 'these technological changes have definitely brought the industry

into agriculture, drastically reducing its dependence on natural resources and processes.'

According to Carneiro da Cunha (2012), the Green Revolution, which began in Mexico, and was spread worldwide since 1960, brought benefits to the increase in world food production, but, on the other hand, with the homogenization of production resulted in enormous environmental liabilities, given the need for intensive use of fertilizers and pesticides.

This development perspective, based only on economic aspects, caused enormous socio-environmental problems, interfering indiscriminately in the environment, neglecting

the social-cultural values of family farmers, who consider their properties not only as a place for the development of productive activities, but also representing a 'space of life,' involving socio-cultural values transmitted from generation to generation.

The way in which technology is transferred to agriculture has neglected family farmer the knowledge, which is why it has been the subject of several studies and questions. In the current context, there is a consensus among scholars that when developing a sustainable rural development project there is a need to create conditions for the interaction between technical-scientific and traditional knowledge to occur, since both are important for the development of new practices that are compatible with the local reality of each territory.

This study aimed at analyzing in the literature the scope of the discussions on the status of the agricultural practices of rural populations, more specifically in family farming, with the objective of identifying the existing economic and knowledge potential for sustainable rural development.

This study is restricted to this publication and it is divided into the chapters: Introduction, Family Farming, Traditional Knowledge, Material is Method, Results, Discussions and Conclusions.

II. FAMILY FARMING

From the perspective of modern agriculture, the peasant was considered as a category that, due to the difficulty in adapting to 'modernity,' represented a social group devoid of knowledge, considered backward, in need of an educational process to insert them in the new paradigm of conventional agriculture production, for this purpose, they should give up their traditional form of production, and at the same time dispose of their cultural heritage, considering that for peasants the material and immaterial are part of their way of life in a systemic perspective.

The peasant concept emerged in Europe during the middle ages. In Brazil, the economic and social structure resulting from the colonization process, where the lands were concentrated by the latifundium and the rest of the workers were on the margin of the system, in the condition of a slave or subordinate to the work of the latifundium, meant that, unlike the European peasants, who had roots with their territories, they showed great mobility to seek better working conditions, due to instability and the precarious situation they lived in their residences and work, without any kind of guarantee for the possession of land (Marques, 2008).

Also, according to the author, it was in the 1950s that the peasant concept, in Brazil, acquires a certain systematization receiving denominations according to the regions of the country, such as, '*caipira* in São Paulo, Minas Gerais and Goiás; *caiçara* on the São Paulo coast; *colono* or *caboclo* in the south - depending on its origin, whether immigrant or not' (Marques, 2009, p. 60). Still, according to the author, although the peasant did not have an identification with certain territories, the cultural heritage remained, regardless of its spatial position.

There is a consensus among scholars on two aspects that are inherent to family farming, its diversity and heterogeneity. It also maintains the characteristics of peasant agriculture and in the performance of its activities incorporates traces of capitalism, since in the family economy regime production is not restricted to self-consumption, with the commercialization of part of the production. In addition, family members carry out other non-agricultural activities, considering the small amount of land (Schneider & Cassol, 2017).

According to Navarro (2010), the denomination family farming in Brazil emerged in the 1990s, previously, the farmers belonging to this group received various denominations such as: subsistence farmers, small producers and smallholders, in the 1970s they were called low-income farmers. In general, according to the author, in the academic literature or not, the reference to this grouping was related to small production. In documents and newspapers, they were called peasants, having a pejorative meaning to highlight, in the perception of the urban society, a class with a low level of knowledge. The name peasant was also given in social research by sociologists following the Marxist tradition. Among producers, the term peasant was rarely used. Regionally, there were also different denominations, in the southern region they were known as settlers, and in the northeast as farmers.

According to Abramovay (1998), there is no unanimity on the definition of family farming. However, regardless of their representations for practical use by the different social sectors, three particularities are part of the core of family farming: family management, property and work, i.e. family farming activities are carried out on small farms, they are carried out by family members and management is carried out by the family itself, without external intervention.

According to Ploeng (2014), the complexity of family farming generates numerous controversies. Its characteristics are not in line with industrial standards and do not respond to bureaucratic and formalized rules in industrial society. And in this sense, due to the difficulty of

inserting into economic patterns, family farming is seen by society as a social group resistant to change, thus acquiring a connotative meaning associated with backwardness. In the author's view, it is facing these difficulties to standardize the activities developed by it that makes it attractive, in this sense, it has much more qualities than the two aspects usually mentioned in its definitions.

As stated by Mattei (2014), the structure of the Brazilian agriculture is a reflection of the colonization process, where from the hereditary captaincies and the various economic cycles to the present day, the land issue and agricultural systems have always been present in political issues related to rural areas. The type of production, based on monoculture, favored large productive areas, considered fertile, for the cultivation of products aimed at serving a market formed by a small group belonging to the crown of Portugal. At the same time, in less fertile areas, such as the northeastern hinterland, subsistence agriculture was developed. This type of social structure is repeated in other cycles, becoming the standard for rural development in Brazil. The successive failure of the economic cycles has established small-scale agriculture, unprotected from any kind of support, generating poverty and social exclusion in rural areas.

III. TRADITIONAL KNOWLEDGE

The protocol of the 10th conference on Biological Biodiversity, held on October 30, 2010 in Nagoya, Japan, highlights the importance of traditional knowledge for the preservation of biodiversity resources. This knowledge, in general, are important sources for the adoption of preservationist practices, because they are the result of interactions and a way of adaptation of man with nature, characterized by a harmonious and balanced relationship. These populations have a vast knowledge of biological diversity. According to the author, the association of these two components, biodiversity and traditional knowledge, represent elements that the various countries should follow in the pursuit of biodiversity preservation (Carneiro da Cunha, 2012).

According to Pereira and Diegues (2010), the United Nations Conference on Environment and Development (Rio 92) emphasized the importance of traditional populations, with their knowledge, for the implementation of nature preservation practices. In this sense, [...] 'traditional populations began to be considered important as actors responsible for the protection of the natural environment in which they are inserted' (Pereira & Diegues, 2010, p. 36).

According to Arruda (1999), the colonization of Brazil, which began in the 16th century, shaped the type of socio-cultural organization of rural populations that follows the model practiced by the indigenous population who already inhabited the territory. Facing an unknown nature, the colonizers adopted indigenous techniques to suppress their needs. They used to plant various products for subsistence, make tools for work and process the products.

As stated by Pereira and Diegues (2010), the discussion around traditional populations is in great evidence not only at a theoretical level, but it is present when addressing the issues related to the development of environmental policies, the issue of technological insertion and territorial analyses that converge to the association of various economic, cultural, social and geographical factors.

According to Carneiro da Cunha (2007), the denomination of traditional knowledge is a form of homogenization to better confront with scientific knowledge, given that each society shows its traditional knowledge that was developed in a given historical context and that has been perpetuating itself from generation to generation. On the contrary, scientific knowledge shows its uniqueness, having as a basic premise the possibility of being replicated in various societies, regardless of cultural habits and values.

In order to value the range of knowledge existing in traditional populations, there is a need to find some way to allow traditional and scientific knowledge to coexist. This does not mean a fusion process between both, on the contrary, it is in this difference that there is the possibility of adding value, in the perspective that traditional knowledge has much contribution to scientific development (Carneiro da Cunha, 2007).

According to Fleury and Almeida (2007), the use of the term 'traditional populations' has been used in the pejorative sense for a long time, referring to societies or groups of people considered backward and underdeveloped. But, in recent decades, with the emergence of the new paradigm focused on sustainability and the concept of transdisciplinarity, more and more traditional knowledge has been addressed by academics and scholars, as the values and practices that need to be rescued in view of 'the close and recent association between traditional knowledge and conservation of natural elements' (Fleury & Almeida, 2007, p. 4).

According to Guivant (1997), technological diffusion in the period after World War II significantly affected rural areas. With the so-called 'technological package' disseminated by the Green Revolution, agriculture was made massive by a pattern of development that disregarded the heterogeneity of production in rural areas.

Family farming, with its traditional knowledge, was considered a sector that adopted practices based on outdated knowledge and that needed to be 'educated' for its insertion in new market trends. However, behind the new practices, there were interests of large corporations and the agribusiness sector that intended to insert the new technologies developed in laboratories into the market, without any contextual analysis. This type of 'linear and vertical' approach began to be questioned by the area of agricultural sciences, NGOs and by government agencies, as the idea of sustainability began to be inserted.

As stated by Santilli (2012), the industrial, agricultural model defined boundaries in the relationship between the activities developed by scientific research and the knowledge of farmers in relation to the various management practices and interaction with the environment. On the one hand, researchers carried out studies on genetic improvement of seeds in their laboratories, aiming at making them more resistant and adaptable to regional heterogeneity, mischaracterizing the local culture and neglecting [...] 'the role of farmers as innovators and holders of knowledge and practices fundamental to agricultural systems and to the maintenance of agrobiodiversity in the field' (Santilli, 2012, p. 461). In this perspective, farmers became mere consumers of inputs and seeds produced by technicians attached to industries.

According to Guivant (1997), the erosion of farmers' knowledge was a consequence of the agricultural modernization model adopted worldwide. The new technologies were developed in restricted environments, developing innovations that were applied vertically and horizontally, without the participation of farmers and aiming at homogenizing agricultural activities.

In this sense, according to Fleury & Almeida (2007, p. 3), 'if we intend to use the traditional way of life as a conservation strategy, offering the democratic bases so that the balance with the natural environment persists, is necessary.' Also, according to the author, when seeking rural development, one must specifically analyze how these populations are inserted in the environment and their dependence on natural resources and the form of intervention in the environment, that is, whether there is a relationship of balance or exploitation of the environment.

In order to highlight the importance of traditional knowledge for the preservation of natural resources, Diegues (2010) makes a comparison between the focus of science and traditional populations on the concept of Biodiversity. According to the author, biodiversity in the conception of traditional populations has a broad meaning and cannot be segmented according to the perspective of

science. Traditional populations see nature as a necessary resource for the maintenance of the social group, at the same time that they withdraw it, these transform and recreate landscapes, and on the other hand, there is the symbolic sense, where the natural and the supernatural are part of a whole in the cosmological sense. On the other hand, the science analyzes biodiversity in a segmented manner, in the laboratory, seeks to create an environment free of interference from factors, said non-scientific, in order to analyze the properties of each species. Still, according to the author, the scientist, when carrying out his/her studies of the places where living beings maintain their interaction, often remove the traditional populations, which was part of the transformation and creation of scenarios, and thus, open space for national and transnational companies conduct research focused on economic interests.

Still, according to Diegues (2010) on traditional knowledge, biodiversity is defined within a place or territory, where one cannot exclude anyone, either independent animals, plants, human beings, because everything is part of the construction of knowledge of these populations, and can classify them, assigning names, make relationships, nothing can be fragmented, in the sense of science, where the systemic reality is removed and parts of nature are analyzed in a segmented way in order to identify certain functioning, parts of reality mechanically, and then reconnect, without considering the cultural factors.

IV. MATERIAL AND METHOD

This research is characterized as a case study that, according to Yen (2001), uses many techniques of historical research such as 'direct observation and systematic series of interviews,' differentiating from other research with the ability to work with various evidence such as documents, artifacts, interviews and observation.

The data collection technique was performed through unstructured and unsystematic observation and a structured interview. According to Marconi and Lakatos (2003), observation is a data collection technique that aims to obtain information and uses the senses to obtain certain aspects of reality. It consists not only in seeing and hearing, but also in examining facts or phenomena that one wishes to study. Unstructured and unsystematic observation consist of collecting and recording the facts of reality with no special technical means or direct questions to be asked by the researcher. Regarding the interview, according to the authors, it can be defined as a meeting between two people, so that one of them obtains information about a certain subject through a conversation

of a professional nature. It is a procedure used in social investigation for data collection or to help in the diagnosis or treatment of a social problem.

The research population is composed of family farmers belonging to the municipality of Cascavel. The districts that were part of the research are: Barreiro, Bom Retiro, Colônia Esperança, Gramadinho, Rio 47, Sapucaia and São Salvador.

The family farmers interviewed were selected for convenience based on their registration with the Emater from Cascavel. Thirty families were interviewed.

The interviews were exclusively directed to landowners, and who was not found in his/her residence, another date was scheduled for the application of the interview. From the list with the names of the landowners, information on the next residences was obtained.

Figure 1 shows the location of the districts from the municipality of Cascavel - PR that were part of the research.

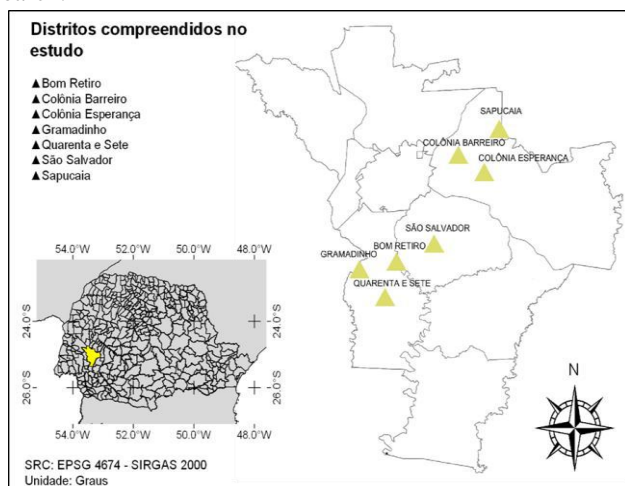


Fig.1: Districts of Cascavel

Source: Geoportal Cascavel, 2019

With the type of research previously defined and the research instruments developed, the search for data in the field of study was divided into two stages: socioeconomic data and identification of the economic and knowledge potential of family farmers from the perspective of sustainable rural development.

V. RESULTS AND DISCUSSIONS

This chapter seeks to analyze the results obtained in the visits to the family farmers' properties where the interviews with the landowners were conducted. For analysis, the data collected were divided into socioeconomic data and economic and knowledge potentialities.

In the presentation through the tables, in order to highlight the results, three colors were determined: red for the factors that according to the proposed objectives show

negative status, yellow for an intermediate situation and green to highlight that the factor analyzed shows positive status.

5.1 Socioeconomic Data

Knowing the profile of the research population is of fundamental importance to identify certain types of behavior in social groups, considering that people do not adopt isolated behaviors, on the contrary, it is possible to identify common characteristics within the various spheres of society in each period. The ties that are established between individuals and the environment where they are inserted, the way people interact with nature and the culture that each social group holds regarding the family tradition, show specific characteristics within certain territories.

Changes in the external environment have a strong influence on whether or not certain behaviors and practices of a given social group remain. With technological evolution and increasing demand for food, more and more, in order to stay in the market, farmers have been subject to rules established by large corporations, becoming part of integrated production systems, serving the interests of organizations. In these production systems, farmers are dependent on all types of resources necessary for production, losing their autonomy in all phases of the production process.

Despite productivity gains and improved income, it does not represent stability, considering that in the globalized market, several factors interfere with production costs and the final price of products. On the other hand, family farmers lose a lot of traditional knowledge that has been passed on from generation to generation, which used to represent a guarantee for the maintenance of families.

According to Batalha, Buainain and Souza Filho (2005), when family farmers are part of the integrated production system, they are submitted to a list of determinations that are part of the principles and values of the companies. In this sense, the agents who provide technical assistance to farmers use management tools that are part of the company's strategy, so that the attributes of the products are consistent with the brand and the interest of the market.

Also reported by the author, in most cases, all the information related to the strategies and technical aspects provided by the integrator is not understood by the farmers, in this sense, the farmers only follow the guidelines without having knowledge about the real purpose of using certain management tools. In addition, as the purchase of products is tied to the integrator, the

farmer ends up losing his/her autonomy to negotiate his/her products in the various marketing channels.

On the other hand, according to the author, this type of experience with integrated production systems can provide farmers who dissociate from companies, by experimenting with organizational culture, with the development of a culture focused on the ‘creation and operationalization of associative structures of production, industrialization, marketing and distribution.’

The following table shows the results of the interviews in relation to the socioeconomic situation of family farmers.

Table 1: Socioeconomic data

Socioeconomic data	Status
Age group of landowners participating in the survey	Red
Age structure of the residents in the surveyed properties	Red
Level of education of the residents in the property	Red
Descendants of spouses	White
Property size in hectares	Red
Time of experiences with agricultural activities	Green
Cultivation for self-consumption	Green
Animal production for own consumption	Green
Production for income generation in the researched properties	Red

Source: prepared by the authors, 2019.

5.1.1 Negative Status

a) Age group of landowners - most of the landowners have advanced age and associated with it, the age structure of the residents in the properties demonstrate that the young population is low, thus, the family farmers are facing the problem of succession. Therefore, the continuity of many family farms is compromised.

b) Level of education of the residents in the properties - predominance of low education of who are the administrators of the property and the young population that is seeking studies is not directed to professions or improvements to engage in activities at the property. Generally, young people who remain on the property are those who have not completed elementary or secondary education in regular education.

c) Property size - is a limiting factor within the predominant form of production practiced by farmers, i.e., production for the generation of predominant income is the cultivation of commodities. In this sense, the need to adapt

the way of production, according to the potentialities existing in the properties is highlighted.

d) Predominant production of income generation - as already highlighted, in most properties, the productive activities are concentrated in the production of commodities, which requires large areas to obtain satisfactory results, since this type of production depends on production in scale, given the high cost of production.

5.1.2 Positive Status

a) Production for self-consumption - family farmers still hold the traditional customs and still do not become totally dependent on the purchase of products from supermarkets.

b) Farmers’ time of experience with agricultural activities - the majority of those surveyed reside on the farm for more than 20 years, in this sense, family farmers show much knowledge about the practices that are developed on the farm, representing knowledge that are perpetuated over several generations and that can add value to the development of intrinsic potentialities to their origins and report the memory of how the farm has been transformed over the decades, showing the successes and failures, and thus can help in the development of projects that fit the local reality, considering the economic and social-environmental aspects of communities.

No classification has been established within the scale created for the descendants of the spouses, since each culture has its own identity and cannot be classified in quantitative terms because the culture is inserted in the way of life of each social group, formed by the precepts and values that are solidified according to time.

Therefore, as already highlighted in this study, the family values and traditions should be preserved to the extent that it is intended to insert new knowledge aimed at adding value to the production of family farmers. In this sense, researchers have stimulated the so-called traditional products, which means adding value to the goods and services offered, from the highlight of the originating culture related to territorial characteristics.

5.2 Economic and Knowledge Potentialities

The inhabitants of rural areas develop their activities based on a routine pre-established by the family; their worldview is still linked to the knowledge acquired through the experiences transmitted from generation to generation.

A few decades ago, with technological insertion in rural areas, the traditional knowledge of farmers was considered delayed in comparison to the technical-scientific knowledge. This perception, based on a disciplinary perspective, restricting absolute knowledge to science, caused much of the farmers' knowledge to be

neglected in family farming development projects. The rescue of this knowledge became a necessity in the face of the enormous social-environmental problems caused by the fragmentation of farmer’s reality, from establishing a standard of agriculture focused exclusively on economic aspects.

The mechanized agriculture facilitated the development of activities in rural areas, thus enabling the increase of planting areas and large-scale production, at the same time, devastated huge green areas and, in certain regions, practically extinguished the vegetation to be used for livestock occupation and the practice of large-scale agriculture aimed at producing commodities. As a result, the imbalance of ecosystems has intensified.

Therefore, in this part of the interview, the existing knowledge in relation to the universe of the relationship between the family farmer and nature, which became practical with the development of productive activities, was analyzed, and also analyzing the existing economic potentialities aiming at the development of family agriculture from the local specificities arising from the physical and cultural aspects.

Table 2: Economic and knowledge potentialities

Categories of analysis	Status
a) knowledge sharing - among farmers - experiences and life stories.	Green
b) Knowledge domain - Soil preservation - Traditional culture - Weather forecast	Green
c) Interaction between technical-scientific and traditional knowledge - Participation in improvement meetings (lecture restricted)	Yellow
- Interaction of knowledge in improvement meetings	Green
d) Origin of knowledge used in farmers' practices - interaction level between technical-scientific and traditional knowledge	Yellow
Share capital	Green
- Community participation	Green
- Entities or associations that are linked	Red
f) Knowledge by Gender - Level of knowledge by gender	Yellow
g) knowledge about property resilience - Protection of residences	Green
- Place to shelter in case of accident or disaster due to natural causes	Red
h) Environment preservation - Perception of environmental legislation	Green
- Use of pesticides on the property	Red
i) Possibilities of business ventures on the	Red

properties - Interest in investing in new business ventures - Knowledge about agroecology - Knowledge about organic production	Red
- Types of existing potentialities - Availability of water on the property	Green

Source: prepared by the authors, 2019.

5.2.1 Positive Status

a) Knowledge Sharing - the habit of farmers to share their knowledge with each other stands out. The interaction among farmers is very important for the process of creating new knowledge, because in order to become useful this knowledge cannot be stored in databases or in people's minds, but instead needs to be expanded and socialized among other farmers in order to initiate new cycles of innovation.

The literature that was analyzed showed that the studies demonstrate that traditional knowledge is still present in the activities developed by farmers and other rural populations because it is shared by families and communities. The authors researched, who addressed the theme in several countries, are highlighted: (Silva, 2017; Glasenapp & Thornton, 2011; Tricaud; Pinton & Pereira, 2016; Oliveira Junior, 2011).

By crossing the empirical research with the data obtained in the national and international literature, a convergence in the results can be observed, i.e., both show that local knowledge is shared among farmers and from generation to generation.

The process of sharing this knowledge allows sustainable practices to be rescued in order to re-establish harmonious interaction between men and nature.

In the current context, sharing this knowledge is becoming increasingly important as recent research has put as a starting point for sustainable rural development the endogenous approach, i.e., the construction of development projects must be based on the interests and motivations of the affected populations.

b) Traditional knowledge domain - on agricultural practices, related to the factors: care with the soil preservation; knowledge about making artifacts; cooking related to family tradition and knowledge about the aspects related to weather changes, the results are positive. It is noticed that despite the strong influence of external interventions aimed at the insertion of new technologies, local knowledge is still present in the daily lives of farmers. This is positive to the extent that the movements focused on the pursuit of sustainable rural development highlight the importance of this knowledge for the development of local potentialities aimed at creating value for products and services and, in general, it is important for

the restoration of the harmonious relationship between man and nature.

With regard to the knowledge domain derived from practices inherited from family tradition, the literature shows that rural populations still preserve their knowledge according to the authors researched (Santos; Soares & Barros, 2015; Glasenapp; Thornton, 2011; Zuchiwschi et al, 2010; Schiavon et al, 2015; Pandey & Sharma, 2016; Tricaud; Pinton & Pereira, 2016; Oliveira Junior, 2011; Marques, 2009; Thé, 2003; Barrué-Pastor; Barrué, 2016).

Also, it was found in the literature as well as in the empirical research that much of this knowledge is being lost, and for being tacit, it can be totally extinguished, losing valuable assets that can no longer be recovered.

c) Interaction of Technical-Scientific and Traditional Knowledge in improvement meetings - this category refers to the establishment of a field of interaction where various types of perception about certain situations that are placed, or when different worldviews enter into 'percussion' generating questionings and contextualizing new learning to local reality.

According to the authors researched (Glasenapp and Thornton, 2011; Pogutz & Winn, 2016; Schiavon et al, 2015; Pandey & Sharma, 2016; Tricaud; Pinton & Pereira, 2016; Oliveira Junior, 2011; Marques, 2009; Thé, 2003; Feliciano, 2013; Viegas, 2009), the importance of knowledge dialogue is being greatly emphasized in the literature.

In the studies analyzed, it was found that in view of the discussions on new technologies, technical assistance services, and any kind of intervention in the practices of traditional populations, the need for different types of knowledge, whether scientific or not, to be considered in the processes of building new knowledge was emphasized.

d) Share Capital – represents the links of farmers in the community of which they are part, where they maintain their traditional forms of interaction through the church, community hall and the bars, as defined by the small local commerce in rural communities. In these places the farmers relate, practice leisure and exchange information about their daily lives.

In spite of maintaining a good relationship with the communities, more and more the farmers' families are ceasing to participate in the community, this loss is very harmful for their families, because the bonds of friendships are being lost, and all the local culture related to ethnicity that were ritualized through the community celebrations and in the participation on Sunday meetings, which besides reinforcing the spirituality, is a form of interaction among people, where knowledge and experiences are shared.

In the literature researched, the works of the authors (Pandey & Sharma, 2016; Tricaud; Pinton; Pereira, 2016) are highlighted, who in their researches demonstrated that farmers have a good social participation through a link with several formal institutions.

Confronted with the empirical research, it was found that farmers have little links with formal organizations such as cooperatives and trade unions.

d) Knowledge on Resilience - as a positive aspect, it was found that there is still a concern of farmers with the protection of their homes against windstorms. In this sense, their residences are protected by trees around them, especially in the direction in which there are wind corridors. This concern is part of the culture of the inhabitants of rural areas.

In the literature review regarding the knowledge on resilience in rural areas, the works of (Glasenapp & Thornton, 2011; Barrué-Pastor & Barrué, 2016) are highlighted, which show knowledge and practices developed by populations living in an environment of imminent risk, which serve as models for researchers to adopt these measures for other populations living in dangerous situations.

The cases cited in the literature reinforce the importance of valuing local knowledge as a way of building solutions that can meet the needs of each territory, creating viable and contextualized alternatives for specific situations contextualized with the local reality, involving the physical and cultural aspects of populations.

e) Concern of farmers regarding the Environment Preservation - it was found that farmers are involved in a conscious way with the preservation of natural resources because the actions for the preservation of natural resources are the result of attitudes directed from an environmental awareness, fruit of the coexistence with nature and the legacy of the family tradition, which had a holistic relationship with nature, in this sense, the environmental legislation is not an external factor that determines the actions of farmers for the care of the environment.

In the literature analyzed, it is verified that the researches demonstrate that the knowledge on sustainable practices are present in the activities of farmers and other rural populations, however, this occurs as a proper action, with no management on this knowledge, on the contrary, it is still preserved by the initiative of the populations, which are constantly invaded by the interests of corporations that aim to implement exogenous methods of interaction and development of activities (Zuchiwschi et al, 2010; Viegas, 2009).

In the comparative analysis of empirical data with those of the bibliographic research, this theme is inserted in the factors on knowledge domain, considering that the actions that farmers adopt are related to the knowledge derived from the experience linked to the culture of traditional populations that treat the environment in a systemic perspective. Between the bibliographic data and the empirical research, the results show a convergence.

f) Availability of water on most farms - most farms have a high availability of water, making it an available resource for possible investments such as fish production and irrigation in the cultivation of vegetables and other products that can generate income for the farmer.

However, as analyzed on site, this type of resource is not being maximized, because it was not identified in the use of this resource for the development of productive activities. Thus, it should be noted again that family farmers are being included in hegemonic development projects that end up being stimulated to develop productive activities that are not identified with their preferences; on the contrary, they are adhering to the type of production that meets the requirements of the companies that operate on the properties by providing technical assistance.

Meanwhile, family farmers are increasingly losing the capacity to generate income, given the type of production that predominates, in this case soy production, where the results depend on production in scale. Consequently, family farmers are becoming more and more economically and socially unstructured, affecting the entire social and family organization, where young people abandon their families in search of other activities and aging landowners are no longer motivated to undertake new activities.

5.2.2. Intermediate Status

a) Interaction of technical-scientific (explicit) and traditional (tacit) knowledge - this factor is related to the diversity of options for carrying out the interaction between farmers and external agents. In this sense, the ways of interaction were very restricted to lectures, not providing opportunities for other ways of interaction than the tacit knowledge of farmers with the technical-scientific knowledge in the practical reality of their properties.

b) Origin of knowledge - although the interaction of both knowledge prevails as the predominant result, it was noticed that there is still some resistance on the part of some farmers to recognize the importance of new knowledge to assist in the activities developed on the farm in order to improve productivity.

Confronting with the empirical research, it is noticed that this theme is analyzed when questioning the process of interaction of farmers' knowledge with that of technicians and extensionists, which is reflected in the

discussion on the traditional method of knowledge transfer that advocated a total transformation in the perception of the world of farmers. Farmers develop their activities based on models that were built by living with nature and were reconstructed over several generations according to the reality of each time. Thus, the literature increasingly emphasizes the importance of valuing traditional knowledge, since it can contribute greatly to the development of actions aimed at sustainable rural development. This compatibility among the different types of knowledge cannot be restricted only to economic factors because, as already analyzed, the practices of rural populations are developed in a holistic way, where the material and the immaterial are congruent factors, contrary to the Cartesian or dualistic view of traditional science of the West.

Concluding the analysis of this factor, there is a need to adjust the posture of external agents when intervening in the reality of farmers. The basic assumption for establishing a positive relationship is to increase dialogue and practical activities that bring the farmer and extensionists closer together as a means of disseminating new knowledge.

c) Knowledge by gender - as analyzed, there is still a *macho* culture on the part of farmers that men have more knowledge on agricultural activities, restricting the field of action of women to domestic activities and the care of dairy cattle. Also, within this perspective, women's social participation is small, thus reinforcing the cultural aspect of the difference between genders in rural areas.

5.2.3 Negative Status

a) Property Resilience - the shelter factor in situations of eventual calamities on properties was negative because the farmers do not show any alternative of protection in case of any type of damage to their homes. Also, they do not have a previously defined strategy if they need to leave their homes or property quickly.

b) Possibilities of business ventures in the property - the factor 'interest' in investing in new business ventures is negative because there is a lack of interest of farmers in investing in view of advanced age and the lack of a successor in the property considering that in most cases their children do not reside in their properties because they are already becoming professional or working in other urban activities.

c) Knowledge on Agroecology and Organic Production - it was found that farmers have little information, in this sense, the new enterprises aimed at sustainable rural development are compromised and with this, an alternative to restore the self-confidence of farmers and stimulate the permanence of young people in the properties ends up

being wasted. Also, the financial resources for investment in this type of activities are limited or unknown to farmers, another difficulty in this type of investment would be the need for greater action by Ater as a sponsor of projects aimed at this type of production.

d) Share Capital - the factor participation in entities or associations was negative, since there was little participation of farmers in formal organizations such as cooperatives and unions. Participation in these entities is a way for farmers to obtain support and it is a channel of aid for solving various economic and social problems. Also, the intermediation of entities such as cooperatives makes it easier for the farmer to obtain inputs, credits and delivery of products for storage.

VI. CONCLUSION

Family farming is increasingly filling space as an important segment of responsible production for supplying the food market. Also, due to the socio-environmental damage caused by the technical paradigm of the Green Revolution, farmers have become protagonists in teaching sustainable practices.

The literature has shown the interest of researchers in analyzing the way of interaction that human beings, living in rural areas, have established with nature. As a culture of these social groups, the knowledge that is transformed into practices for the development of economic activities and social organization of families are perpetuated from generation to generation.

The results indicate that the socioeconomic status is quite compromised, considering the higher age group of the residents in the properties and the absence of family members willing to take over the management of the properties. The lack of public incentives and technical guidance for the development of production alternatives that may arouse the interest of young people to remain in agricultural activities has contributed to the expulsion of young people from rural areas. The activities that are developed in the properties are not very attractive and profitable because the predominance of cultivation is related to the production of commodities that is not suitable for small-scale production.

With regard to the knowledge potential, there is a positive status related to farmers' knowledge on sustainable practices. However, in relation to the incorporation of this knowledge into productive activities, there is a gap between local and scientific knowledge because farmers are not developing activities to generate income in line with the knowledge they have on sustainable practices.

Rural development projects should be built in a participatory manner together with the local population, especially young people, so that they are encouraged to stay on the farms and at the same time become multipliers of successful models for other farmers in the community.

In short, the generalist model of rural development that is developed outside the reality of farmers, most of the time does not meet the needs and interests of farmers who identify themselves in activities with local peculiarities, due to sociocultural factors.

Therefore, according to the results of the empirical research, family farming remains with its characteristics that are perpetuated from generation to generation; however, the activities developed in their properties are decontextualized because, as analyzed, the activities developed by the surveyed farmers are basically summarized in the cultivation of commodities, which is not suitable for small properties, since its profitability is associated with production in scale. Thus, many economic and knowledge potentialities are not being put into practice.

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