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INCUBATION: SUITABLE SOCIAL TECHNOLOGY FOR THE PROMOTION OF SUSTAINABLE PRACTICES IN AGROECOSYSTEMS

Ligia Paula Cabral do Rosário
Universidade Estadual Paulista
ligia.agronomia@yahoo.com

Maria José de Souza Barbosa
Instituto Federal de Educação, Ciência e Tecnologia
mjsb.ufpa@gmail.com

ABSTRACT: The aim of this study was to discuss the role of the university and technology incubators as social technology applied to solving problems in solidary economic enterprises. We highlighted the importance of the interdisciplinarity as an interface between different areas of knowledge, considering the overcoming disciplinary fragments of instrumental rationality. Secondly, we evaluated the techniques and instruments used to obtain the data, such as the fast rural diagnosis, as well as the use of questionnaires and interviews to the knowledge of the reality in incubation methodologies, that organizes a set of methods, techniques and instruments for the application of coordinated knowledge, under participatory planning with the associated riverine farmers for solving problems related to the consolidation of sustainable agriculture and local self-management.

KEYWORDS: Incubation, Interdisciplinarity, Social technologies.

INCUBAÇÃO: TECNOLOGIA SOCIAL ADEQUADA À PROMOÇÃO DE PRÁTICAS SUSTENTÁVEIS EM AGROECOSSISTEMAS

RESUMO: No presente artigo buscou-se discutir o papel das incubadoras universitárias e tecnológicas enquanto tecnologia social aplicada à resolução de problemas em empreendimentos econômicos solidários. Destacou-se a importância da interdisciplinaridade como interface entre diferentes áreas de conhecimento, tendo em vista a superação de fragmentos disciplinares da racionalidade instrumental. Em seguida foram abordadas as técnicas e os instrumentos utilizados na obtenção de dados, como o diagnóstico rápido participativo, bem como o uso de questionários e entrevistas para o conhecimento da

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realidade à luz das metodologias de incubação, que organiza um conjunto de métodos, técnicas e instrumentos para a aplicação de conhecimento coordenado e em conjunto com os agricultores ribeirinhos associados visando mitigar ou consolidar agricultura sustentável sob forma de autogestão local.

PALAVRAS-CHAVE: Incubação; Interdisciplinaridade, Tecnologias Sociais.

INCUBACIÓN: TECNOLOGÍA SOCIAL ADECUADA PARA LA PROMOCIÓN DE PRÁCTICAS SOSTENIBLES EN AGROECOSISTEMAS

RESUMEN: En el presente artículo se buscó describir los materiales y métodos utilizados en el ámbito de la investigación aplicada, para el desarrollo de la disertación de maestría en Desarrollo Rural y Gestión de Emprendimientos Agroalimentares, ofrecido por el Instituto de Educación, Ciencias y Tecnología (IFPA / Campus Castanhal). En este sentido, se discute el papel de las incubadoras universitarias y tecnológicas, como tecnología social. La importancia de la interdisciplinariedad como campo de interfaces entre diferentes áreas de conocimiento, con miras a superar la fragmentación de la racionalidad instrumental. A continuación se describen las técnicas y los instrumentos para la obtención de datos, como el diagnóstico rápido participativo, así como, cuestionarios y entrevistas aplicados con el objetivo de conocer la realidad a la luz de la metodología de incubación, que organiza un conjunto de métodos, técnicas e instrumentos para coordinar el planeamiento y las acciones en conjunto con los agricultores ribereños asociados, en la resolución de problemas relativos a la consolidación de la agricultura sostenible autogestionaria. Todos estos momentos se realizaron en la relación directa con los sujetos de la acción.

PALABRAS CLAVES: La incubación, Interdisciplinariedad, Tecnologías Sociales.

INTRODUCTION

Incubators at federal institutes, as well as at universities, become a reference for their teaching (training), applied research and extension actions, as a moment of return of their knowledge and learning to society. For that matter, Eid (2016, p.232) calls attention to the fact that incubation constitutes a social technology that comprises techniques, products and even methodologies capable of replicating territorial development processes in interaction with the protagonist subjects.

Thus, it is understood that incubators have constituted themselves as laboratories of practical exercises and experimentation to the extent that

> "(...) works with the principle of building knowledge in a democratic and collective way, and seeks to share it with other communities with similar needs. From my point of view, social technology is not only knowledge made and adapted, directed towards society ((EID, 2016, p.232)."

The author thinks social technology beyond, considering that these translate, in the academic and social environment, the exchange of knowledge between the popular and the technical-scientific.

Therefore, incubation as social technology

> "... starts from a critique of the neutrality of science and technology, and its construction takes into account the need to adapt the current technology if we want to build a society with new social relations of production[1]" (HENRIQUES; NEPOMUCENO; ALVEAR, 2015, p.348)

and translates into effective solutions that seek to transform certain problems.

The incubation of solidarity enterprises, as social technology, has resulted in solutions that are adequate to the demands of the subjects involved in the innovation action. For that matter, it seeks to develop educational processes under the unity between teaching, research, and extension, aiming to overcome the fragmentation of knowledge, as it is carried out through an effective and active dialogue between educators and students.

This methodological movement takes place through knowledge of reality, technical advice and training focused on the subjects, so that they can access knowledge capable of interacting with their own popular knowledge to solve problems in an autonomous and self-managing way, although with the support of the incubator and other interrelated technical and institutional networks.

Thus, there is not a rigid mechanism in the movement of research and

[1] Original quote: "... parte de uma crítica à neutralidade da ciência e tecnologia, e sua construção tem em vista a necessidade de adequação de tecnologia vigente, se quisermos construir uma sociedade com novas relações sociais de produção".

technical advice, considering the fact that each action needs to take into account the dynamics of the engaged subjects. We emphasize interdisciplinarity as an essential condition to the movement of teaching, research and extension, to articulate the various activities, under the enchainment of the different dimensions of social and economic life to cover environmental, cultural, and political issues, among others.

For this reason, the incubation methodology became a basic assumption of this movement of apprehension and resolution of problems related to the self-management of agro-food enterprises in the Baixo Tocantins territory. According to Fraga (2018) the incubation process is subdivided into pre-incubation, incubation, and deincubation of the incubated enterprises, which is the moment when teams of educators accompanied the actions of these groups.

The incubation methodology constitutes a set of techniques and instruments necessary for the production and adaptation of knowledge to be applied in local realities, in the relationship conducted with the subjects of the action. It is a teaching, research and extension methodology that presupposes the action of the subjects involved.

The incubation methodology is debated as a social technology that aims at the application of technical-scientific knowledge in permanent exchange with popular knowledge. The theme of interdisciplinarity is highlighted as a way of breaking the fragmented knowledge, and rapid participative planning as one of the components inserted into incubation, with a view to favoring diagnoses of reality and the demands of the protagonists of the incubation action.

It also addresses the methodology of training and technical assistance as elements of the procedure of effective insertion in the context of solidarity enterprises, a necessary condition for the internship linked to the professional master's degree and, at the same time,

the contribution to advance the practices of sustainable agriculture as a consequence, the improvement of the quality of life of these subjects of riverine family agriculture.

This article describes, therefore, the action-research process carried out in the scope of the Professional Master in Rural Development and Agri-Food Enterprise Management, made possible by the internship linked to INCUBITEC[2]. We tried to demonstrate, not only the process of knowledge of reality, which began as a scholarship student of technological initiation and resulted in research for the elaboration of the Final Paper of the Agronomy Graduation Course and that was continued when acting as a technician engaged in this laboratory of experiences and construction of applied knowledge, deepened in the realization of the master's degree, specifically in the process of research and technical advice, with training through workshops and mini-courses aimed at strengthening sustainable agriculture.

The debate on rural territorial development, stimulated by the network of socio-productive movements, was taken as a reference, emphasizing popular cooperatives of solidarity economy as first-degree economic structures, but also verified the second-degree instances such as the commercialization consortium and the federation of popular cooperatives, institutions that have been stimulating the development of riverine family agriculture in the Territory of Baixo Tocantins.

In conclusion, the article discusses the relevance of teaching, research, and tension as indissoluble units rearning and, at the same time, for the potentialization of development processes centered in local subjects (individual and collective) of the productive mobilization of rural territories.

[2] Incubadora Tecnológica de Desenvolvimento e Inovação de Cooperativas e Empreendimentos Solidários.

INCUBATION: A METHODOLOGY APPLIED IN RESPECT OF SOCIO-CULTURAL DIVERSITY

Incubation, in this space, reveals itself as an important methodology insofar as it allows the debate and the constitution of concrete actions with effects contrary to social inequalities.

For Barbosa and Eid (2012) the valorization of knowledge and culture of local subjects is an essential condition to develop scientific research in the Amazon, with focus on establishing processes of professional formation anchored in a reality constituted by phenomena of precariousness of public spaces and services aimed at local subjects. Therefore, applied research

> "... provide data for generating new techniques and technologies, which can be used in reversing the framework of anthropic impacts caused by the expansion of society"[3] (CÓRDULA; NASCIMENTO; LUCENA, 2018, p.86).

This condition favors the creation of a critical vision, as well as the commitment to engage with these subjects in order to expand the network and flows of information, knowledge and action.

For these authors, involvement is strategic in order to constitute or even incorporate new abilities and technical competencies capable of leveraging other networks in the search for overcoming the problems identified. The approach and sensitization become constitutive elements of new socio-economic and political-cultural dynamics.

By applying the incubation methodology it is possible to face challenges and find opportunities related to the development of the Amazon, particularly when associating technological areas with social technologies supported by local popular knowledge. This is what will be discussed in the items and sub-items below, from the presentation of the processes of apprehension of reality and experimentation via the actions

[3] Original quote: "... fornecem dados para geração de novas técnicas e tecnologias, que podem ser utilizadas na reversão do quadro de impactos antrópicos causados pela expansão da sociedade"

developed in the perspective of promoting sustainable practices, as a contribution of INCUBITEC, in rural territorial development strategies.

Natural resources, for this reason, become one of the important components in the context of INCUBITEC's action with the traditional populations of the Amazon (riverine, indigenous, remaining quilombos, artisanal fishermen, family farmers and peasants).

Interdisciplinarity is one of the necessary requirements, in view of the joining of efforts to understand the different dimensions of social life, which is why it is highlighted in the item below.

INTERDISCIPLINARITY IN OVERCOMING FRAGMENTATION OF KNOWLEDGE

For Barbosa and Eid (2012) the incubators are laboratories for the formation of skills and technical capacities that are not offered in classrooms, or if they are, they occur with very rare exceptions.

The political, economic and social transformations of the contemporary world have profoundly altered the spatial scenario of the Brazilian Amazon, helping to neglect the existence of populations that traditionally occupy this region, which has a strong dependence on its natural resources (FERREIRA, 2013).

The isolation and the lack of basic public services show themselves as a necessity for the creation of opportunities, in the possibility of generating new products in the middle of a "continent" that has been little studied and researched. Access to support services for the production of knowledge and logistics to assist traditional populations is rare.

In this field traditional knowledge is a necessary element for "... discussion around agroecological practices..."[4]

[4] Original quote: "... discussão em torno de práticas agroecológicas...".

(VIANA; SIMÕES; BASTOS, 2020, p.136).

Thus, it is important to break with fragmented conceptions between nature and society, to assume an interdisciplinary stance, bearing in mind that these two dimensions cannot be separated in the production of knowledge. It opens, in this context, the

> "... possibility of potentiating other rationalities for the engagement of the various knowledge systems, the training and professionalization of teachers, professionals in general and the university community, strengthening contents and knowledge based on sustainable values and practices"[5] (SCHMIDT; GOMES; JACOBI, 2019).

This posture rises to new dimensions of analysis and action with local subjects and valorization of their socio-natural practices in the dynamics of development with environmental sustainability, in which the human is in tune with nature.

In this matter, the role of university incubators is essential, to the extent that they enable access to information and services that the subjects of solidarity enterprises in the Amazon have difficulty to access, due to the low technical capacity installed in their local communities, although rich in possibilities of producing innovative knowledge.

So, the incubators, for being constituted with different areas of knowledge, have favored experiences of articulation between these disciplinary areas in interfaces, to promote development actions in the direct relationship with local subjects, whose interaction generates interdisciplinary knowledge processes.

This is a spiral of movements of apprehension and application of knowledge in the direct relationship with the subjects of the incubation action. In the axis of this process, the different areas of knowledge promote discussions and debates about social reality and nature, with possibilities of

[5] Original quote: "... possibilidade de potencializar outras racionalidades para o engajamento dos diversos sistemas de conhecimento, da formação e profissionalização docente, de profissionais em geral e da comunidade universitária, fortalecendo conteúdos e conhecimentos baseados em valores e práticas sustentáveis".

joint action, constituting new and interdisciplinary knowledge. In this process, knowledge of the specific locus enhances research and extension in the field of interdisciplinarity.

The researchers and students linked to the incubators have the opportunity for new insights due to the ease in obtaining spaces for cooperation with the incubated collective subjects, thus generating new technical capacities in a space that allies knowledge production and concrete action in the interaction between the university and the solidary enterprises, from a rich exchange, although in this space problems and conflicts may be generated between these two worlds (academic and popular) that are apparently disconnected.

Interdisciplinarity, therefore, constitutes a field of articulation and disciplinary interfaces under a direct dialogue between scientific knowledge in relation to popular knowledge. In this space, the research subjects become links of a practical and objective action, in the meeting of common interests with forms of learning and problem-solving for solidarity enterprises.

For Matos (2012),

> "[...] the debate on extension and rural development is articulated with the dynamics of territory, which is an inseparable element of learning in research dimensioned by cooperation..."[6] (MATOS, 2012, p.237).

For this author, the incubators and the enterprises have managed to find points of convergence for remaining in the field, to the extent that they act in such a way as to sustain the autonomy of the subjects in their self-management practices. For this, the collective appropriation of the means of production is a central element, for these are the supports of autonomy in the field, in production, and in social reproduction.

Thus, the processes of training and technical assistance resulting from the incubation potentiate the land as a living and working space, to the extent

[6] Original quote: "o debate da extensão e do desenvolvimento rural está articulado com a dinâmica do território que se constitui elemento indissociável do aprendizado na pesquisa dimensionada pela cooperação...".

that the riverine family farmers, in this specific case, experience training through short courses, workshops, and research practices.

In this space, the training and technical advices have repercussions in the construction of strategies resulting from the "...application of social technologies aimed at improving their agro-ecosystems, in order to support the principles of solidarity, reciprocity, cooperation, sustainable development and collective production"[7] (OLIVEIRA, 2012, p. 237).

The training and rural extension activities refer to territorial development, contributing to the socio-productive organization processes, in search of alternatives for sustainable and self-managed practices. In this perspective Puhl; Dresch (2016) with the junction of teaching, research and extension requires rethinking paradigms and models of traditional vision thinking, to mitigate the distance between the university and the local community. The integration of the exercise of practice and theory by researchers in the field is necessary.

Among its many particularities, it presents a diversity of agro-ecosystems, calling attention to one in particular for its characteristics, the Amazon floodplains. This ecosystem is inhabited by traditional peoples and communities who live and develop their productive activities, adapting them according to the rhythm of nature, constituting traditional family agroecosystems (LIRA; CHAVES, 2016).

Accordingly, Barbosa and Eid (2012, p.32) start from the demands for training, technical monitoring and assistance to solidarity enterprises, which require continuous reflections, bearing in mind that the research is conducted in view of the needs of solidarity enterprises, in the absence of access to basic conditions of social development.

[7] Original quote: "... aplicação de tecnologias sociais voltadas à melhoria de seus agroecossistemas, a fim de dar sustentação aos princípios de solidariedade, reciprocidade, cooperação, desenvolvimento sustentável e produção coletiva".

In this space the exchange of knowledge and questions becomes the guiding thread of a path established by means of personal and collective experiences in the construction of new knowledge.

> "The dialogue between university and community through an accessible and decoded language of academic-scientific technicism [...], in the construction of knowledge under a context in which all are bearers of generated knowledge"[8] (BARBOSA; EID, 2012, p.32).

Therefore, social technologies aim to enhance the dynamics of applied knowledge together with the holders of the development of the territory they are linked to.

MATERIAL AND METHODS

THE INTERNSHIP IN SOLIDARITY ENTERPRISES IN THE TERRITORY OF BAIXO TOCANTINS

The contribution of the Incubators, besides the applied research experiences, is shown by the dissemination, diffusion and socialization of the formation and incubation processes, considering that the local subjects favor discussion and reflection processes about reality, making learning alive and spiraling.

In this sense, we have tried, through meetings with community leaders and participation in assemblies, to get to know the demands of riverside farmers mediated by the PRD (Participatory Rural Diagnosis), a technique capable of obtaining data on a specific reality, because it is applied in a local context and is based on questionnaires (preferably applied by the subjects themselves, under the guidance of the technical team), as well as interviews with leaders and/or subjects involved in the problem at hand. The aim was to build a profile of these subjects that would allow us to characterize them from a socioeconomic point of view, through their productive activities, in order to understand the current situation of these farmers, based on their struggle

[8] "O diálogo entre universidade e comunidade por meio de uma linguagem acessível e descodificada do tecnicismo acadêmico-científico [...], na construção de saberes sob um contexto em que todos são portadores de conhecimentos gestados".

trajectories and socio-productive organization (VERDEJO, 2010).

To carry out the PRD we used the transversal walking technique, which consists of walking through a certain area, accompanied by local informants who know the territory. This technique aims to observe the agro-ecosystems along the way. At this moment information was obtained about the landscape, the structure of the plots, the production, etc. When a curiosity arose, the informant was asked about issues pertinent to that place, such as environmental problems, past situation, present reality, perspectives, potentialities, and limitations.

In incubation it is necessary, as previously mentioned, that a diagnosis be made in order to get to know the reality and, at the same time, to get to know the demands of the subjects involved in the incubation action. For this reason the PRD has favored the participation of the cooperative members as protagonists of this process of knowledge and decision making in the resolution of their problems. The data collection carried out in loco, by means of the Participative Rural Diagnosis, made it possible to apply 149 semi-structured questionnaires, with open and closed questions in order to obtain qualitative and quantitative data, allusive to the historical profile of the formation of the different socio-productive organization modalities of these subjects. When it was understood that associativism has a central role in the mobilization of the territory, constituting a mechanism for agglutination of local demands for development actions.

In this process of knowledge, the diagnosis makes possible to trace the historical trajectory of the subjects (FREITAS; FREITAS, DIAS, 2012), a necessary condition for incubation under a new démarche in terms of the formation of professionals (research and extension) anchored in the dynamics of rural territorial development, namely, in the actions of the mobilizing subjects of the territory of sustainable agriculture, from the self-management of agri-food systems. In

this context, the INCUBITEC team acts as facilitator of the approximation movement and of the knowledge of the problems presented by the subjects that demand the incubation and dynamizes the execution stages, so that these subjects can be in command of the process.

The dialogue with those interested in the incubation actions is essential, aiming to create means capable of favoring their insertion in the different moments and phases of the incubation process. From the apprehension of reality to the construction of solutions occurs in an interdisciplinary and integrated way with the subjects of the enterprises. The phases, stages and moments of interaction result, to a great extent, from the very availability of the subjects, considering that the team of researchers/extensionists is focused on attending to their problems.

After the stages of knowledge, an informal contract of cooperation is made, under a work agenda organized from the list of priorities defined together, to solve the identified problems. The involvement of everyone becomes essential, because it starts from the experiences of those who wish to overcome certain problems. From there, their identification facilitates the mobilization of the necessary resources for the construction of activities and actions that will be carried out in an interactive way, as well as the possible solutions, under an exchange of knowledge that values the skills and competences of the local people.

These methodological procedures favor, therefore, training and technical assistance based on the problems identified during the knowledge of the reality, in its different dimensions.

The analysis and technical advice require interaction with the subjects of sustainable agriculture practices in an environment of precarious services. The numerous problems raised demand dynamic relationships and articulations beyond the incubation action. However, together with the subjects, priorities are established and defined in common.

Based on these decisions, short-term planning is carried out, taking into account the time available for the experience with the farmers in the exercise and learning about values, culture, and social practices, such as acting under the regime of *mutirão*, a community acction. This movement, which involves everyone (researchers and associates) is called the pre-incubation phase, characterized by knowledge of the social reality and then introducing the incubation phase, that is, the execution of the actual training and technical assistance activities through mini-courses, workshops, technical visits, field days, among other activities.

The experience stage establishes the necessary relationships for the execution of activities with riverside farmers, in order to strengthen the practices of sustainable agriculture.

The experience was carried out in the Mutirão Association with the participation of CAEPIM's[9] cooperative members, who suggested the revitalization of the fruit tree nursery, but also the destination of four beds of the seedbed for planting vegetables, since the supply of this product is scarce in the locality.

Thus, the fruit and forest plant nursery was restructured, with the effective involvement of local people in the execution of practical tasks. We measured the area and gathered information about the species that would be handled, in the reconstruction and operation of the nursery, as demanded by these people. For the restructuring of the nursery, which is suspended to avoid the destruction caused by tidal flows, it was necessary to strengthen its structures to ensure the sustainability of the seedlings.

The revitalized area of the nursery has the dimension of 8mx30m; plus 10 more benches with approximately 2m wide, by 8m long. In this process decaying wood was replaced; substrate was also purchased for the production of seedlings; in parallel, it was decided to build a compost bin with organic

[9] CAEPIM – Cooperativa

substrates, in an area of 5.20 x 5.20m, thus enhancing the production of sustainable agriculture.

The nursery has two types of areas: one for productive and non-productive trees - the productive areas include the beds and seedbeds and the non-productive areas are made up of paths, roads and areas built to extend the nursery, depending on factors such as replanting; density of seedlings/m2 (depending on the species); species and its rotation period; dimensions of the beds, walks (paths) and roads; dimensions of the walks (or paths); dimension of the roads (or streets); dimension of the facilities; adoption, or not, of an area for green manure (in the case of bare-root nurseries).

The distribution of the beds, paths, buildings, and especially access aimed to improve the circulation and use of the nursery structure, which contributes positively to the interaction between man, the environment, and the community, in addition to strengthening conservation practices and diversification of native forest species and fruit trees of the Lower Tocantins River.

To ensure the continuity of this nursery, training was given on seed collection and sowing of native species; a calendar was prepared for seed collection of native forest species, along with a list of the most commonly found seeds in the territory. Figure 1 shows part of the seedling nursery, with its access roads, shade cloth, and organized beds (benches) ready for use. It is noteworthy that in all these moments there was the integration of the beneficiaries and their families.

The restructuring of the seedling nursery aimed to reintroduce the discussion about biodiversity conservation in floodplain and upland areas in order to ensure their sustainability. The revitalization of this nursery is a pilot activity for the recovery of areas in the process of degradation or destruction; this unit is considered an experimental area, with a view to replication in other places.

Figura 1. Viveiro de mudas para implantar as hortaliças das bancadas.

Source: Authors, 2019.

These activities consist of technical assistance to solidarity enterprises, in which INCUBITEC has the concern to meet the demands, but also the exchange of knowledge, as a way to dynamize the extension in favor of sustainable agricultural practices.

In Figure 2 we can see the work of the INCUBITEC fellows measuring the nursery to meet the demand of the partners, who needed certain species to plant or to replace areas in the process of degradation in the productive family units. However, it was necessary to wait for the germination period of the species so that they could be planted in the productive units.

The picture above shows a practical moment of valorization and promotion of the production of seedlings for distribution to members and other residents of the surroundings of the solidarity enterprise. The seedling nursery area is considered an experimental unit.

Figura 2. Measurement of the seedling nursery area

Source: Authors, 2019.

RESULTS AND DISCUSSION

TRAINING FOR THE CONSORTIA OF FRUIT AND FOREST SPECIES

Training and technical assistance are key to sustainable agriculture practices. They constitute moments of involvement of the subjects in productive dynamics in order to create links between theoretical debate, analysis of concrete experiences, and experimentation, for these different perspectives are essential in incubation aimed at rural territorial development in floodplain agro-ecosystems.

Experimentation becomes a concrete exercise of formation aiming at the introduction of sustainable agriculture practices, such as the implantation of a consortium system between fruit plants and forest species. All the actions were carried out in an experimented practical interdisciplinary team. In this sense, the reflections took place in cooperation with the master's degree advisor, therefore, they account for an analysis built on the interface of two specific areas of knowledge (Agronomy and Social Work), whose analytical matrix goes through territorial development and sustainable agriculture.

The training was carried out through mini courses, initially on associativism, cooperativism in order to strengthen

social organizations; but also on composting; alternative fertilizers and vegetables in general, medicinal plants for manipulation in the form of tea, garrafadas[10] and for food, usual practices in traditional communities.

The emphasis was on the organization and implementation of an Agroforestry System (AFS), which depends on several factors: adequate management, action planning, and appropriate cultural treatments. In this way, all the farmers that produce in this type of system contribute to the maintenance of biodiversity, since it guarantees the intercropping between different species, they aim to contribute to the protection of the environment and the reduction of deforestation.

Thus, the cooperative farmers have combined diversity with sustainability. The agroforestry system, besides guaranteeing several types of crops, such as fruit trees, forest essences, improves production and raises productivity. These factors provide the farmer with the means to obtain monetary income. The example of the açai plantation system, intended for the production for the family's internal consumption and for the commercialization of the surplus, thus moving the financial flow of the families throughout the year.

Environmental sustainability, most often, is understood as broad spectrum productive agroecosystem. Thus, when thinking about the maintenance of agricultural production under the SAF system, it defends an action of environmentally sustainable agriculture, namely, food production without causing environmental damage, which requires the maintenance of soil capacity and other natural resources to ensure economic sustainability with biodiversity conservation.

For Marinho (2009), the extractivism has brought sensitive changes in the relationship of the floodplain farmer with nature and with the

[10] Combinations of medicinal plants in alcoholic beverages (in general) or other type of liquids, used for various purposes in folk medicine.

socioeconomic environment. For example, the commercial valorization of products, such as açaí, the collection of oilseeds, aromatic essences, fruits, and wood. This production can be carried out entirely through a consortium. A condition that enables the maintenance of biodiversity, even where native acai is the main economic activity and source of income for the riverside dwellers. This activity has caused changes in the productive family units, both for domestic consumption and for income generation. The cultivation of manioc and its byproducts (flour, tucupi, cassava gum, and tapioca flour) are also essential, as well as cocoa, cupuaçu, passion fruit, and the collection of the almonds, commercialized in natura or in fruit pulp.

Agricultural production and forest conservation coexist in the same area, under a consortium system between timber, ornamental, and medicinal fruit plants, among others. Agroforestry systems are, in this sense, sustainable production alternatives to guarantee income throughout the year, where land use is economically viable and ecologically sustainable.

THE BAIXO TOCANTINS: TERRITORY OF SUSTAINABLE AGRICULTURE

In the territory of the Baixo Tocantins River, specifically the floodplain areas, sustainable practices have contributed to the permanence of people in the countryside. The implementation of AFS units demonstrates that the diversification of agricultural production integrated with the forest has an intelligent use, insofar as the main dynamics of riverside farmers are linked to nature itself.

The AFAS's are implemented as sustainable production alternatives, in which farmers, besides providing the natural physiognomy recomposition, promote the forest succession, through the regeneration of native species, diversifying the productive units, with production in the short, medium, and long terms. They have maintained a variety of adapted herbaceous, shrub,

and tree species, ensuring constant production in the different seasons of the year, with the possibility of improving living conditions and sustainable territorial development.

INCUBITEC has valued the implantation of AFS units, aiming to serve as an example, to spread the idea, in order to meet and obtain diversified products, from sustainable family agriculture.

CONCLUSIONS

Sustainable agriculture in the municipality of Igarapé Miri has contributed to the promotion of sustainable rural territorial development (environmental, social, economic, and cultural). Through this practice it is possible to raise the income of families involved, since diversification generates products for self-consumption and surpluses for marketing throughout the year, unlike the monoculture of certain fruits that are seasonal. Therefore, sustainable agriculture developed through AFS's is strategic, not only to expand the conservation of native açaí plantations and other biodiverse natural products, to the extent that the techniques and correct management practices in the planting areas enable the preservation of forest species present in the production units of the riverside families. This practice constitutes an important instrument for the maintenance of biodiversity, therefore, the greatest wealth of the Amazon.

A reality that is disseminated by INCUBITEC, through incubation, a social technology that has as its main axis the solidarity economic enterprises, in the direct relationship with the protagonist subjects of the productive social mobilization of the rural territories, whether in floodplain areas, as in the presented experience, but also on dry land, because they guarantee the maintenance of different species of fruits, fruits and other woody and non-woody products, besides the survival of animals that live in these spaces and enjoy the fruit species and forest essences.

Therefore, the experience of implementing various productive arrangements, in agroforestry systems has contributed significantly to rural territorial development, insofar as they value the knowledge of local populations, in which the AFS's constitute themselves as social and renewable technologies and appropriate to the use of natural resources, and enable income in the period between harvests of açaí (Euterpe oleracea Mart.), the main product of the local economy.

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