

**Athens Institute for Education and Research
ATINER**



**ATINER's Conference Paper Series
ECO2015-1687**

**Multifunctionality of Family Farmer and
Policies to Overcome the Extreme Poverty in
the Brazilian Semiarid**

**Gustavo Bittencourt Machado
Professor
School of Veterinary Medicine and Animal Science
Federal University of Bahia
Brazil**

An Introduction to
ATINER's Conference Paper Series

ATINER started to publish this conference papers series in 2012. It includes only the papers submitted for publication after they were presented at one of the conferences organized by our Institute every year. This paper has been peer reviewed by at least two academic members of ATINER.

Dr. Gregory T. Papanikos
President
Athens Institute for Education and Research

This paper should be cited as follows:

Bittencourt Machado, G. (2015). "Multifunctionality of Family Farmer and Policies to Overcome the Extreme Poverty in the Brazilian Semi-arid", Athens: ATINER'S Conference Paper Series, No: ECO2015-1687.

Athens Institute for Education and Research
8 Valaoritou Street, Kolonaki, 10671 Athens, Greece
Tel: + 30 210 3634210 Fax: + 30 210 3634209 Email: info@atiner.gr URL:
www.atiner.gr

URL Conference Papers Series: www.atiner.gr/papers.htm

Printed in Athens, Greece by the Athens Institute for Education and Research. All rights reserved. Reproduction is allowed for non-commercial purposes if the source is fully acknowledged.

ISSN: 2241-2891

09/11/2015

Multifunctionality of Family Farmer and Policies to Overcome the Extreme Poverty in the Brazilian Semiarid

Gustavo Bittencourt Machado

Professor

School of Veterinary Medicine and Animal Science

Federal University of Bahia

Brazil

Abstract

This paper aims to present the results of the research entitled Familiar farmer multifunctionality and strategies to overcome the situation of extreme poverty in the Chapada Diamantina Territory, located in the semiarid region in the State of Bahia, Brazil, that proposes to comprehend the production and activity systems of rural and indigenous communities in the Chapada Diamantina, which is a region in the Bahia countryside characterized of table mountains. Moreover, this paper also aims to find out strategies for the situation of extreme poverty overcome through the recognizing of the public functions of the rural families in these communities, destined to the environmental preservation (environmental function), knowledge transfers between generations (education function). In Brazil, this discussion has barriers about the sources that finance these functions. The Green Scholarship Program of Brazil, Without Misery, is the first national policy whose main objective is to overcome the extreme poverty in Brazil, considering the environmental services. This paper tries to consider these public policies, using the analyses tools to understand the familiar small farmer diversity, including the Agrarian systems Analysis-diagnosis Method and the new intervention methods. The case study takes place in the Chapada Diamantina Territory, specifically the Itaetê municipality, in the agrarian reform settlements where there are extreme poverty situations and where the first experiences for the Green Scholarship Program, Family Scholarship program complement, take place.

Keywords: Extreme poverty, Familiar farmer multifunctionality, Green Scholarship, Semiarid.

Introduction

This paper aims to present the results of the research, entitled *Familiar farmer multifunctionality and strategies to overcome the situation of extreme poverty in the Chapada Diamantina Territory, located in the semiarid region in the State of Bahia, Brazil*, that proposes to comprehend the production and activity systems of rural and indigenous communities in the Chapada Diamantina, which is in the Bahian countryside a region characterized of table mountains. Moreover, this paper also aims to find strategies for the situation of extreme poverty overcome through the recognizing of the public functions of the rural families in these communities, destined to the environmental preservation (environmental function), knowledge transfers between generations (education function). In Brazil, this discussion has the barriers to finance these functions.

The Green Scholarship Program of Brazil, Without Misery, is the first national policy which the main objective is to overcome the extreme poverty in Brazil, considering the environmental services in order to overcome extreme poverty. This paper tries to consider these public policies, using the analyses tools to understand the familiar small farmer diversity, including the Agrarian systems Analysis-diagnosis Method and the new intervention methods.

The case study take place in the Chapada Diamantina Territory, specifically in the Itaetê municipality, in the agrarian reform settlements where there are extreme poverty situations and where the first experiences for the Green Scholarship Program, Family Scholarship program complement, take place.

The Agriculture Multifunctionality and its Meanings

The subject of "multifunctionality" has been used in different meanings on agricultural policies according to the countries and their context. The essential elements of the multifunctionality are the following elements: existence of multiple based products and others that are jointly produced by the agriculture; the fact that some products present externality features or public interest goods but the markets of these goods do not exist or have bad operations.

The OECD's report aims to analyze the multiple goods in the discussions on agriculture multifunctionality, comprehending the studies on environmental services or products. The consideration of rural employment and food security in the multifunctionality discussion is controversial because the rural employment is connected to the agriculture as an agricultural production component. It is not an agriculture product but an externality. Therefore it is necessary to mention the rural exodus diminution for the urban markets.

The main associated questions related to food security consist of the internal production (auto-consumption) with respect to the alternative sources. The multifunctional characteristic of agricultural production becomes relevant for the policies if, among the multiple generated products, some farmers increased or decreased the well-being, even in the situation without private

markets for the externalities. The agriculture in rural areas contributes with individual incomes, offers employment and generates incomes in the regions. The agriculture creates preconditions to keep the agricultural communities in the rural space that participates in the economic and social life of the areas.

As to the environmental benefits, the agricultural production can have a substantial impact in the environment that can be positive or negative with a multidimensional character that depends on the intensity of the agricultural production and management in the farms. The intensive agricultural production can cause soil degradation and erosion, biodiversity reduction and water pollution. Animal wellbeing is associated with meat, milk and egg production. Animals can be used for human benefits.

Multifunctional agriculture is able to stabilize the society and protect the environment in unequal development areas. According to the multifunctionality concept, the agriculture has other functions, such as food production for the rural space development, valorizing the cultural heritage and supplying rural economy and increasing food security (Petkova and Margariteva, 2013).

The relationship between agriculture and environment has been the object of many works in the OECD. The agro-environmental relationship is addressed on the joint production. The Green Scholarship Program, created in 2011, aims to help families in extreme poverty situations that develop activities for the environmental conservation. The environmental services of the program comprehend the maintenance of the vegetation of the rural farms and the sustainable using of the natural resources. The source of the resources is the Brazilian federal government.

The value of the payment for each family is an income of R\$300,00 (almost US\$100.00), per three months, during two years, and more two years. Among the environmental services, there are the respect for the possession and earth, territories and natural resources; contribution for the sustainable and economic diversification of natural resources using; contribution for the conservation and recuperation of natural ecosystems, biodiversity and environmental services; promotion of better governance, coordination and alignment with national, regional and local policies and guidelines.

Research Methodology: Agrarian Systems Analysis-Diagnosis Method

A part of the research was developed in the agrarian reform settlements in the Itaeté municipalities, in the Chapada Diamantina Territory, *located in the semiarid region in the State of Bahia*, and 97 rural families from these settlements were interviewed. The resources were obtained from the Green Scholarship Program and Family Scholarship Program, using The Agrarian systems Analysis-diagnosis Method that was developed at the *Institut des Sciences et Industries du Vivant et de l'Environnement (AgroParisTech)*. The interviews were done in the Macaco Seco, Rosely Nunes, Santa Clara and Moçambique Settlements.

The agricultural and non-agricultural incomes were calculated and organized to evaluate the impacts of the Green Scholarship Program for the extreme poverty overcome strategies, relating income transfer programs and the recognizing of the public functions of family agriculture, as the preservation of the territory.

The Agrarian systems Analysis-diagnosis Method is a research method for plural and systemic planning that comprises several disciplinary fields of the analysis of the complexity of the agrarian reality, of the agrarian (farming) systems in the history and the different exploitation modes of the natural resources in the assorted ecosystems and combinations of the cropping systems, creation and processing that structure and characterize the types of production systems and activities.

According to Dufumier (2007), the development of a typology of the agricultural holdings in each of the demarcated areas aims to show how the several categories of farmers practice different production systems according to the resources that they have and with the social relationships in which context they operate. In other words, how the production units became an object of an unequal capital accumulation and how the practiced production systems differentiated themselves.

The characterization of the agricultural system aims to identify the main technical and economic problems of the farmer categories. It becomes evident how the farmers associate with several activities and agricultural techniques on their farms, considering the diversity of the local edaphological conditions and the more or less predictable climate variations (Dufumier 2007).

The result of the production is measured by the gross domestic product (GDP), which represents the total value of what is produced, either for sale, or for family consumption. The production system consumed goods are transformed in the process and totalize the intermediate consumption (IC). The rental costs of equipment or hiring services are also included. The family provides for the production, their heritage (sort of fixed capital), which is partially transformed because they have depreciation and lost value. This cost is calculated as the annual depreciation of fixed capital (D) and added to other costs, for example taxes (T), interest (I), salaries (Sal) and land lease (LL). Finally, the subsidies (Sub) are added.

The part of gross domestic product (GDP) that stays with the farmer after the intermediate consumption deduction, equipments depreciation, taxes, interest, salaries and land lease, added to the subsidies, comprises the agricultural income (RA), according to the following formula:

$$\mathbf{RA = GDP - IC - D - Sal - T - I - LL + Sub}$$

The final equation of family incomes is the sum of the agricultural income with the non-agricultural income and the hidden income (domestic work - DW). This income, in fact, does not exist because it has no exchange value, although there is a family corporate job that depends from other activities (subsystems) and can be measured by the opportunity cost of the domestic employment in the studied region (Machado 2011).

$$\mathbf{TR = AR + NAR + DW}$$

TR = total income; RA = agricultural income; NAR = non-agricultural income; DW = opportunity cost of domestic work (labor) in the region

Chapada Diamantina Territory

According to the MDA (2010), the Chapada Diamantina Territory is situated in to Território Chapada Diamantina, located in the centre of Bahia State, composed by 23 municipalities¹, in a total area of 30.458,88Km².

The population of the municipalities of the Chapada Diamantina Territory grew up a little between 2000 and 2010, with a population of 352.607 in 2000, and 359.677, in 2010. In the Itaetê municipality, 65 families were settled in the Macaco Seco Settlement Project in 2000; 141 families in the Baixão Settlement Project in 1998; 50 families in Europa Settlement Project, in 2000, and 60 families in Santa Clara Settlement Project in 2005.

Incomes and Reproduction Level of Settled Families

In the Rosely Nunes Settlement, the families get the benefits from the Green Scholarship Program and the Family Scholarship Program, necessary for the maintenance of these families in the settlement, during the long drought of the Northeast semiarid region, between 2011 and 2013. These families did not get any result of their harvest, animal farm, and the agricultural income is equal to zero. The familiar income was obtained by the governmental transfers (Green Scholarship and Family Scholarship) and retirements occasionally.

Is the Green Scholarship added to the Family Scholarship enough to remove these rural families from extreme poverty conditions in the long drought period?

Pluri-Active Families with Cattle, Backyard, Green Scholarship and Family Scholarship

In the *Pluri-active family with cattle, backyard, Green Scholarship and Family Scholarship*, the man works in the carpentry jointly with his wife, in the cattle breeding and backyard, and the woman is dedicated for domestic activities with much intensity.

A family with 2 familiar work units and 4 members gets R\$ 3.600,00 (or almost US\$ 1,200.00) from the carpentry, R\$ 1.200,00 (US\$ 400.00) from Green Scholarship and R\$ 1.224,00 (US\$ 408.00) from Family Scholarship per year. The animals cost almost R\$ 600,00 (US\$ 200.00), from intermediate consumption, with a negative agricultural income. The total income corresponds to R\$ 5.425,00 (almost US\$1,800.00) with an annual food basket of R\$

¹ Abaíra, Andaraí, Barra da Estiva, Boninal, Bonito, Ibicoara, Ibitiara, Iraquara, Itaetê, Jussiapé, Lençóis, Marcionílio Souza, Morro do Chapéu, Mucugê, Nova Redenção, Novo Horizonte, Palmeiras, Piatã, Rio de Contas, Seabra, Souto Soares, Utinga e Wagner.

3.600,00 (US\$ 1,200.00). The Green Scholarship and the Family Scholarship correspond to 40% of the family's total income.

Rosely Nunes Settlement

Families with Green Scholarship and Family Scholarship

In the Rosely Nunes Settlement, there are families that only get the *Green Scholarship and Family Scholarship*. These families don't work in agricultural activities in the settlement because of the prolonged drought. They get R\$ 1.200,00 (US\$ 300.00) from Green Scholarship and R\$ 2.400 (US\$ 800.00) from Family Scholarship in 2013 with 3 UTF (Family Work Unit) and 4 members in the family. The food basket corresponds to R\$ 4.386,00 (US\$ 1,460.00) per year. Other families with the *Family Green Scholarship and Family Scholarship* get R\$ 1.200,00 (US\$ 400.00) from the Green Scholarship and R\$ 2.880,00 (US\$ 960.00) from Family Scholarship and the food basket is R\$ 4.386,00 (US\$ 1,460.00). The total income corresponds to R\$ 4.080,00 (US\$1,360.00).

Not-agricultural Families with Employee, Green Scholarship and Family Scholarship

The *Not-agricultural Families with employee Green Scholarship and Family Scholarship*, are families with 2 family work units and 5 members, that get R\$ 1.200,00 (US\$ 400.00) from non-agricultural activities, in the diarist condition, R\$ 1.200,00 from the Green Scholarship and R\$ 4.080,00 (US\$ 1,360.00) from the Family Scholarship. The familiar food basket is R\$ 3.786,00 (US\$ 1,260.00) per year. The annual family income corresponds to R\$ 6.480,00 (US\$ 2,160.00).

Families with Retirement, Green Scholarship and Family Scholarship

The *Families with retirement, Green Scholarship and Family Scholarship*, are families with 2 UTF and 3 members. The families get R\$ 8.685,00 (US\$2.895.00) from retirement per year, in 2013, with R\$ 2.400,00 (US\$ 800.00) from the Family Scholarship and R\$ 300,00 (US\$ 100.00) from the green scholarship. The annual food basket corresponds to R\$ 3.186,00 (US\$ 1060.00) and the total family income per year corresponds to R\$ 11.385,00 (almost US\$ 3,800.00).

Families with Retirement and Family Scholarship

The *Families with retirement and Family Scholarship and Family Scholarship* get R\$ 8.685,00 (US\$ 2,900.00) from retirement and R\$ 480,00 (US\$ 160.00) from the Family Scholarship, with a total family income of R\$ 9.185,00 (almost US\$ 3,060.00). The food basket corresponds to R\$ 2.600,00 (US\$ 870.00) per year.

Agricultural Families with Cattles, Backyard, Green Scholarship and Family Scholarship

It is a family with 3 family work units and 7 members. The man works with cattle and the backyard with chickens and the woman is dedicated to domestic

work and the backyard with chickens. One of the children is dedicated to cattle breeding, backyard and domestic work. There is a negative agricultural income because of the expenses with intermediate consumption in the value of R\$ 660,00 (US\$ 220.00) with cattle breeding and R\$ 360,00 (US\$ 120.00) with the backyard.

The family gets R\$ 1.200,00 (US\$ 300.00) from the Green Scholarship and R\$ 4.728,00 (almost US\$ 1570.00) from the Family Scholarship. The food basket corresponds to R\$ 4.800,00 (US\$ 1,200.00) per year. The family income corresponds to R\$ 5.930,00 (almost US\$ 1975.00), as government transfers.

Moçambique Settlement

In the Moçambique Settlement, 10 family types and their activity and agricultural production system were obtained, that are similar to each other, but present determinant differences when it comes to their income levels.

Pluri-active Families with Green Scholarship and Family Scholarship

In *Pluri-active families with breedings, Green Scholarship and Family Scholarship*, there are 4 family work units with 5 members in each family. There is a negative agricultural income and the family gets the Green Scholarship, the Family Scholarship and non-agricultural incomes because a member works as a diarist during a year. The not-agricultural income corresponds to R\$ 9.885,00 (almost US\$ 3,300.00), the food basket, R\$ 4.325,00 (US\$ 1,440.00), the green scholarship, R\$ 300,00 (US\$ 100.00) and family scholarship, R\$ 1.700,00 (almost US\$ 560.00).

In this case, there is a *Pluri-active family with the Green Scholarship and Family Scholarship*, and the non-agricultural family is negative, less than R\$ 360,00 (US\$120.00), R\$ 1.200,00 (US\$ 400.00), and the Green Scholarship of R\$ 1.200,00 (US\$ 400.00), the family scholarship, de R\$ 4.320,00 (US\$1,440.00), the food basket, of R\$ 4.800,00 (US\$ 1,600.00). Government transfers are necessary to assure the survival of this family type.

In this type, there is another case of a *Pluri-active family with the Green Scholarship and Family Scholarship*, where the Green Scholarship corresponds to R\$ 1.200,00 (US\$ 400.00), the Family Scholarship to R\$ 4.270,00 (US\$ 1.423.00) and the non-agricultural income corresponds with the value of R\$ 2.400,00 (US\$ 800.00), and the food basket in the value of US\$ 100.00. The transfers are necessary, in this type, for retirement of the families in the extreme poverty condition. It is a family with 5 family work unit and 7 members.

The *Pluri-active families with the Green Scholarship and Family Scholarship*, are families with 7 family work units and which consist of 7 members. The family gets R\$ 1.200,00 (US\$ 400.00) from the Green Scholarship and R\$ 2.900,00 (US\$ 960.00) from the Family Scholarship. These families obtain a non-agricultural income of R\$ 2.400,00 (US\$ 800.00) with a food basket of R\$ 3.600,00 (US\$ 1,200.00). The Green Scholarship and Family Scholarship contribute to the retirement of this family type in the extreme poverty condition.

Agricultural Families with Retirement, Family Scholarship and Green Scholarship

In this case, there is a family with 4 family work units and that consists of 4 members. This family type gets R\$ 8.685,00 (US\$ 2,900.00) from retirement, R\$ 480,00 (US\$ 160.00) from the Family Scholarship and their food basket is R\$ 2.940,00 (US\$ 980.00). The woman devotes much time to the domestic work and the man distributes his work time among the other activities.

In the *Agricultural families with retirement with the Green Scholarship and Family Scholarship*, there are 4 family work units and 4 members in the family. The agricultural income is negative – R\$ 112,00 (US\$ 37.00), the Green Scholarship corresponds to R\$ 1.200,00 (US\$ 400.00), the Family Scholarship to R\$ 1.700,00 (US\$ 560.00) and the family gets R\$ 8.685,00 from retirement. The food basket corresponds to R\$ 6.000 (US\$ 2,000.00). The activities are distributed among the family members and the woman works in the domestic activities. It is a family with a diversified production system.

Pluri-active Families with the Family Scholarship

This family type consists of 3 family work units and 5 members. The man distributes his time among many agricultural activities and the woman, 63% of the time, is destined for the domestic activities. The family gets R\$ 1.200.00 (US\$ 400.00) from a member that is an employee and R\$ 4.200.00 (US\$ 1,400.00) from the Family Scholarship with a food basket of R\$ 6.000,00 (US\$ 2,000.00).

In this family, the woman is dedicated to 63% to the domestic activities. It is a family with 2 family work units and 4 members. The family gets R\$ 1.200,00 (US\$ 400.00) from non-agricultural incomes, R\$ 2.900,00 (US\$ 960.00) from the family scholarship, and the food basket corresponds to R\$ 3.600,00 (US\$ 1,200.00). The Family Scholarship is necessary to retire this family from the extreme poverty condition.

Agricultural Family with Family Scholarship

It is a family with 3 family work units and 3 members. The family gets R\$ 190,00 (US\$ 63.00) from agricultural incomes, R\$ 3.840,00 (US\$ 1,280.00) from the Family Scholarship and the food basket corresponds to R\$ 4.290,00 (US\$ 1,430.00). This family is in an extreme poverty situation, and the Family Scholarship is not enough to assure the based incomes for this family. The woman devotes 42% of her time for domestic activities and 37% to the backyard and garden.

In another *Agricultural Family with the family scholarship*, the Family Scholarship corresponds to R\$ 1.200,00 (US\$ 400.00) and the basic basket to R\$ 1.800,00 (US\$ 600.00). It is a type in an extreme poverty situation.

Pluri-active Families with Retirement, Green Scholarship and Family Scholarship

These families consist of 5 family work units and 5 members. The woman devotes 55% of her time to domestic activities. The agricultural income is negative. The family gets R\$ 3.480,00 (US\$ 1,160.00) from the family

scholarship, R\$ 1.200,00 (US\$ 400.00) from the Green Scholarship and R\$ 8.685,00 (US\$ 2,890.00) from retirement. The food basket corresponds to R\$ 5.400,00 (US\$ 1,800.00).

Agricultural Family

It is a family with 5 family work units and 6 members. The woman devotes 44% of her time to domestic activities and 31% to the backyard with the chickens. This family does not have any kind of income and the food basket corresponds to R\$ 1.800,00 (US\$ 600.00) per year. It is a family helped by the rural community.

Agricultural Families with Retirement, Green Scholarship and Family Scholarship

These families consist of 6 family work units and 8 members. The woman devotes 43% of her time to domestic activities. It is a diversified agricultural production system. Despite this, with a prolonged drought, the agricultural income in 2012 was zero. These families get R\$ 1.200,00 (US\$ 400.00) from the green scholarship, R\$ 4.270,00 (US\$ 1,423.00) from the Family Scholarship and R\$ 2.400,00 (US\$ 800.00) from non-agricultural activities. The food basket corresponds to R\$ 3.000,00 (US\$ 1,000.00). The Green Scholarship and the Family Scholarship are necessary to retirement of these families from the extreme poverty condition.

Agricultural Families with Green Scholarship and Family Scholarship

It is a diversified agricultural production system with the distribution of activities among the members of the family. The woman devotes 20% of her time to domestic work. The agricultural income is negative – R\$ 300,00 (US\$ 100.00) because of the prolonged drought and R\$ 1.200,00 (US\$ 400.00) is from the Green Scholarship and R\$ 4.490,00 (almost US\$ 1.400,00) from the family basket. The food basket corresponds to R\$ 3.600,00 (US\$ 1,200.00). The Green Scholarship and the Family Scholarship are necessary for retirement for this family in the extreme poverty condition.

The *Agricultural family with the Green Scholarship and Family Scholarship* is a family with 2 family work units and 4 members. The non-agricultural income corresponds to R\$ 385,00 (US\$ 130.00), the Green Scholarship corresponds to R\$ 1.200,00 (US\$ 400.00), the Family Scholarship to R\$ 2.900,00 (US\$ almost US\$ 970.00) and the food basket to R\$ 4.320,00 (US\$ 1,440.00). In this family type, transfers are necessary for the retirement of this family from the extreme poverty.

It is a family with 5 family work units and 9 members. The family gets R\$ 6.000,00 (US\$ 2,000.00) from retirement, R\$ 1.200,00 (US\$ 400.00) from the Green Scholarship and R\$ 1.080,00 (US\$ 360.00) from the family scholarship. The food basket corresponds to R\$ 3.600,00 (US\$ 1,200.00). The Family Scholarship and the Green Scholarship are not necessary for the retirement of the family from the indigence situation.

In this family type, the other families get R\$ 8.685,00 (almost US\$ 2,890.00) from retirement, R\$ 1.200,00 (US\$ 400.00) from the green

scholarship, R\$ 2.400,00 (US\$ 800.00) from the Family Scholarship and the basic basket corresponds to R\$ 4.800,00 (US\$ 1,200.00). Retirement is necessary to keep this family in the production system.

Families with Green Scholarship and Family Scholarship

These are families with 3 family work units and 5 members. The woman devotes 40% of her time to domestic activities and the man, 25%. The family gets R\$ 1.200,00 from the green scholarship, R\$ 5.520,00 from the Family Scholarship and the food basket corresponds to R\$ 3.600,00 (US\$ 1,200.00).

Santa Clara Settlement - Agricultural Families with Green Scholarship and Family Scholarship

In the *Agricultural family with Green Scholarship and Family Scholarship*, the man devotes 30% of his time to the corn and beans consortium and the woman 33%. Women also devote 44% of their time to domestic activities. The family gets R\$ 1.200,00 (US\$ 400.00) from the green scholarship, R\$ 2.160,00 (US\$ 720.00) from the Family Scholarship and R\$ 57 (US\$ 19.00) from agricultural income.

In this family type, in another family that gets Family Scholarship, the woman devotes 60% of her time to domestic work and 40% to cattle breeding. The family does not get the incomes from agricultural activity and obtains R\$ 3.840,00 (US\$ 1,280.00) from the Green Scholarship with a food basket of R\$ 3.600,00 (US\$ 1,200.00). Other situations of Agricultural families with the Green Scholarship and Family Scholarship correspond to a negative agricultural income, R\$ 255,00 (US\$ 85.00). The Family Scholarship corresponds to R\$ 1.320,00 (US\$ 440.00) and the Green Scholarship to R\$ 1.200,00 (US\$ 400,00). The food basket is R\$ 3.000,00 (US\$ 1,000.00).

Pluri-active Families with Retirement and Family Scholarship

The family gets R\$ 2.630,00 (US\$ 875.00) from the Family Scholarship and a retirement of R\$ 8.685,00 (US\$ 2,890.00). The non-agricultural income corresponds to R\$ 3.600,00 (US\$ 1,200.00) and the food basket to R\$ 4.200,00 (US\$ 1,400.00).

Agricultural Families with Retirement, Green Scholarship and Family Scholarship

In these families the woman devotes 35% of her time to castor bean plantations and 65% to domestic work. The men devote 70% of their time to castor bean plantations and 30% to domestic work. The family gets R\$ 8.685,00 (US\$ 2,900.00) from retirement, R\$ 1.200,00 (US\$ 400.00) from the green scholarship, R\$ 1.585,00 (US\$ 530.00) from the Family Scholarship. The family food basket corresponds to R\$ 3.600,00 (US\$ 1,200.00).

Pluri-active Family

It is a family that obtains its income from the employee condition. The family does not obtain agricultural incomes and the non-agricultural income

corresponds to R\$ 9.585,00 (US\$ 3,195.00). The food basket corresponds to R\$ 3.600,00 (US\$ 1,200.00).

Green Scholarship Incomes in the Total Family Income: Comparison of the Reproduction Levels

Reproduction Levels in the Rosely Nunes

In *Pluri-active families with cattle breeding, backyards, Green Scholarship and Family Scholarship*, the Green Scholarship and Family Scholarship were necessary to remove this family type from its extreme poverty condition and classify it in the simple reproduction when the incomes are used for the family maintenance. Without the Family Scholarship and the Green Scholarship, this family would be in an extreme poverty condition. In this family type, the capitalized families are observed and they are classified in the expanded reproduction, where it is possible to accumulate and invest in the productive systems.

In the *Not-agricultural Family* that only gets incomes from Green Scholarship and Family Scholarship, these government transfers were not enough for the retirement of these families from the extreme poverty condition. In the case of *Non-agricultural families with work, Green Scholarship and Family Scholarship*, the Green Scholarship and Family Scholarship are necessary for the retirement of the family from the extreme poverty condition. This family is classified in the simple reproduction. Without these government transfers, this family will stay in extreme poverty conditions.

In the *Family without retirement, Green Scholarship and Family Scholarship*, the retirement is a determinant to retire the family from the extreme poverty condition, classifying it in the simple reproduction condition. The Family Scholarship and the Green Scholarship will not be enough for the retirement of this type of family from extreme poverty conditions. This situation happens with the *Family with retirement and family scholarship*.

For the *Agricultural Family with cattle, backyard, Green Scholarship and Family Scholarship*, the Family Scholarship and the Green Scholarship are necessary for overcoming extreme poverty and maintaining this family in the simple reproduction. In the *Agricultural Family with retirement, Family Scholarship and green scholarship*, the retirement is a determinant to classify this family in the simple reproduction level. The Family Scholarship and the Green Scholarship will not be enough for the retirement of this family from extreme poverty.

In the *Agricultural Family with retirement*, the non-agricultural incomes are important to classify these families in the simple reproduction level. These families do not get a Green Scholarship and Family Scholarship. In the *Agricultural Family with Family Scholarship and green scholarship*, there are families in an extreme poverty situation, where the Family Scholarship and Green Scholarship are not enough to retire these families from this situation. There are situations where the agricultural income is a determinant to classify

the family in the expanded reproduction level and situations that the Family Scholarship and Green Scholarship are necessary to classify the family in the simple reproduction level. In the *Pluri-active family*, the non-agricultural incomes are important for the classification of the family in the simple reproduction level.

Table 1. *Family Types and their Reproduction Levels in Rosely Nunes Settlement, Itaeté Municipality, Bahia, in 2013*

Family type	Reproduction level	Family type	Reproduction level
<i>Pluri-active Family with cattle, backyard, familiar scholarship and Green Scholarship</i>	Simple	<i>Family with Green Scholarship and Family Scholarship</i>	Extreme poverty
Pluri-active family with Family Scholarship and Green Scholarship	Expanded	Family with Green Scholarship and Family Scholarship	Extreme poverty
<i>Pluri-active Family with Green Scholarship and Family Scholarship</i>	Expanded	<i>Not-agricultural family with worker and Green Scholarship and Family Scholarship</i>	Simple
Family with retirement, Green Scholarship and Family Scholarship	Simple	Family with retirement and Family Scholarship	Simple
<i>Agricultural Family with cattle, backyard and Green Scholarship and Family Scholarship</i>	Simple	<i>Pluri-active Family with retirement</i>	Simple
Agricultural Family with retirement with Green Scholarship and Family Scholarship	Simple	Agricultural Family with Green Scholarship and Family Scholarship	Simple
<i>Agricultural Family Green Scholarship and Family Scholarship</i>	Extreme Poverty	<i>Agricultural family Green Scholarship and Family Scholarship</i>	Simple
Agricultural Family Green Scholarship and Family Scholarship	Simple	Agricultural Family with Green Scholarship and Family Scholarship	Expanded
<i>Pluri-active Family</i>	Simple	<i>Agricultural Family with retirement</i>	Simple
Agricultural Family with retirement	Simple	Agricultural family with retirement	Simple

Source: By author.

Reproduction Levels of the Moçambique Settlement

In the *Pluri-active Family with Green Scholarship and Family Scholarship*, in general, the families are situated in the simple reproduction level, when the family keeps themselves in the production system without being capitalized with an annual income bigger than R\$ 1.500,00 (US\$ 500.00) per year. There are extreme poverty situations as well as expanded reproduction when the agricultural incomes are determinants in the total incomes.

These families stay in the poverty situation, but besides the extreme poverty level that corresponds to the food basket. The retirement is decisive to keep the family in the simple reproduction level, complemented with the Green Scholarship and Family Scholarship which will not be enough to retire the families from the extreme poverty level.

In the *Agricultural family with retirement and Green Scholarship and Family Scholarship*, the retirement is decisive to retire the families from the

indigence level, keeping them in a simple reproduction level. The Green Scholarship and the Family Scholarship will not be enough to maintain the family survival. There are situations where the family is situated in the expanded reproduction level. For the Pluri-active family, in some situations, the Family Scholarship contributes to the retirement of the families from extreme poverty, keeping them in the simple reproduction level. In other situations, the family stays in the extreme poverty level.

In the *Pluri-active family with retirement, Green Scholarship and Family Scholarship*, the family stays in the simple reproduction level and the retirement has a considerable weight in the family's income structure. In the Agricultural family the Family Scholarship is not enough to retire the family from the extreme poverty level. The agricultural family that does not get the Family Scholarship stays in the indigence level.

The *Agricultural family with retirement, Green Scholarship and Family Scholarship* stays in the simple reproduction level because of retirement, Family Scholarship and green scholarship. In the *Agricultural family with Green Scholarship and Family Scholarship*, there are some families that keep up the extreme poverty level and some families that can keep up in the simple reproduction level. *Families with retirement, Green Scholarship and Family Scholarship* stay in the simple reproduction level, in addition to the indigence limits because of the impacts of the retirement incomes. Also the families that get the Family Scholarship and Green Scholarship and that are not agricultural and pluri-active stay in the simple reproduction level because of the high value of the family scholarship.

In the *Agricultural Family with Green Scholarship and Family Scholarship*, the situations when the families are classified in the extreme poverty level were observed. The Family Scholarship and Green Scholarship were not enough in the expanded reproduction level when the agricultural income is a determinant for the total income.

Table 2. Family Types and their Reproduction Levels in the Moçambique Settlement, Itaetê Municipality, Bahia, in 2013

Family types	Reproduction level	Family types	Reproduction level
<i>Pluri-active family with breedings, Green Scholarship and Family Scholarship</i>	<i>Simple</i>	<i>Family with Green Scholarship and Family Scholarship</i>	<i>Simple</i>
Pluri-active family with Green Scholarship and Family Scholarship	Simple	Family with Green Scholarship and Family Scholarship	Simple
<i>Pluri-active family with Green Scholarship and Family Scholarship</i>	<i>Simple</i>	<i>Agricultural family with Green Scholarship and Family Scholarship</i>	<i>Expanded</i>
Pluri-active family with Family Scholarship and Green scholarship	Simple	Agricultural family with Family Scholarship and green scholarship	Extreme poverty
<i>Agricultural family with retirement and family scholarship</i>	<i>Simple</i>	<i>Agricultural family with Family Scholarship and green scholarship</i>	<i>Extreme poverty</i>
Agricultural family with retirement, Green Scholarship and Family Scholarship	Simple	Pluri-active family with retirement and green scholarship	Simple
<i>Pluri-active family with family scholarship</i>	<i>Simple</i>	<i>Agricultural family with retirement, Green Scholarship and Family Scholarship</i>	<i>Expanded</i>
Pluri-active family with family scholarship	Extreme poverty	Pluri-active family with Green Scholarship and Family Scholarship	Simple
<i>Pluri-active family with retirement, Green Scholarship and Family Scholarship</i>	<i>Simple</i>	<i>Pluri-active family with Green Scholarship and Family Scholarship</i>	<i>Extreme poverty</i>
Agricultural family with family scholarship	Extreme poverty	Pluri-active family with Family Scholarship and green scholarship	Simple
<i>Agricultural family with family scholarship</i>	<i>Extreme poverty</i>	<i>Pluri-active family with Family Scholarship and green scholarship</i>	<i>Simple</i>
Agricultural family	Extreme poverty	Pluri-active family and Family Scholarship and green scholarship	simple
<i>Agricultural family with retirement, Green Scholarship and Family Scholarship</i>	<i>Simple</i>	<i>Pluri-active family with Family Scholarship and green scholarship</i>	<i>Expanded</i>
Agricultural family, Green Scholarship and Family Scholarship	Simple	Pluri-active family with Family Scholarship and green scholarship	Expanded
<i>Agricultural family with Green Scholarship and Family Scholarship</i>	<i>Extreme poverty</i>	<i>Family with retirement, Green Scholarship and Family Scholarship</i>	<i>Simple</i>
Family with retirement, Green Scholarship and Family Scholarship	Simple		

Source: By author.

Reproduction Levels of the Santa Clara Settlement

The *Agricultural Family with Green Scholarship and Family Scholarship* type families are classified in the extreme poverty level, and the *Family Scholarship* is not enough to overcome the indigence condition. The *Pluri-active family with retirement and Family Scholarship* and *Agricultural family with retirement and Family Scholarship and Green Scholarship* types were classified in the simple reproduction level because of the retirement impacts which increase the familiar incomes. The *Pluri-active family* is classified in the simple reproduction level because of the retirement impacts.

Table 3. *Family Types and their Reproduction Levels in the Santa Clara Settlement, in Itaetê Municipality, Bahia, in 2013*

Family types	Reproduction level	Family types	Reproduction level
<i>Agricultural family with Green Scholarship and Family Scholarship</i>	<i>Extreme poverty</i>	<i>Agricultural family with Family Scholarship</i>	<i>Simple</i>
<i>Agricultural family with Green Scholarship and Family Scholarship</i>	<i>Extreme poverty</i>	<i>Pluri-active family with retirement and Family Scholarship</i>	<i>Simple</i>
<i>Agricultural family with retirement, Green Scholarship and Family Scholarship</i>	<i>Simple</i>	<i>Pluri-active Family</i>	<i>Simple</i>

Source: By author.

Reproduction Levels in Macaco Seco Settlement

The *Agricultural family with Green Scholarship and Family Scholarship* type families are classified in the extreme poverty level, and the *Family Scholarship* and the *Green Scholarship* are not enough to overcome the indigence condition. The *Pluri-active family with retirement and Family Scholarship* and the *Agricultural Family with retirement and Family Scholarship and Green Scholarship* family types are classified in the simple reproduction level because of the retirement impacts which increase the familiar income.

Table 4. *Family Types and their Reproduction Levels in the Santa Clara Settlement, in the Itaetê Municipality, Bahia, in 2013*

Familiar type	Reproduction level	Familiar type	Reproduction level
<i>Agricultural family, with Green Scholarship and Family Scholarship</i>	<i>Extreme poverty</i>	<i>Agricultural Family Green Scholarship and Family Scholarship</i>	<i>Extreme poverty</i>
<i>Agricultural family with family scholarship</i>	<i>Simple</i>	<i>Agricultural family with retirement, Green Scholarship and Family Scholarship</i>	<i>Simple</i>
<i>Pluri-active family with retirement and family scholarship</i>	<i>Simple</i>	<i>Pluri-active family</i>	<i>Simple</i>

Source: By author.

Conclusions

The research contributes to comprehending the relationship between the extreme poverty overcome policies and the policies destined to recognize the family agriculture multi-functionality, considering the economic, social, cultural, environment and territory functions, on a mountain region, having, as a case study the agrarian reform settlement, in the semiarid of Bahia, where a lot of families live in an extreme poverty situation. The Green Scholarship and Family Scholarship Program that helps to overcome the extreme poverty are analyzed, needing the expansion of the environmental preservation and conservation actions in the region.

A part of the research has developed in the agrarian reform settlements in the Itaeté municipality, in the Chapada Diamantina Territory, located in the semiarid region in the State of Bahia. Comprehending the fellow students where 97 settled families that were interviewed and got resources from the Green Scholarship and Family Scholarship Program, using the Agrarian systems Analysis-diagnosis Method. The interviews took place in the Macaco Seco, Rosely Nunes, Santa Clara and Moçambique Settlement. The agricultural and not-agricultural incomes were calculated and organized to value the Green Scholarship Program in the strategies for overcoming extreme poverty, establishing the income transfer programs and the beginning of the recognizing the public functions of the family agriculture about the territory preservation.

The public policies that recognize the familiar farmer multi-functionality are widespread in Europe, through the Comun Agriculture Policy and the national policies. This research project presents and demonstrates the importance of the convergence between public policies for overcoming extreme poverty and the environmental policies. The Green Scholarship is an example of direct payments for the environmental services that can be adopted in Brazil, according to the Forest Code. This research brings the primary results obtained jointly to the settled family farmers from the agrarian reform, in the semiarid of Bahia, related to poverty, extreme poverty and environmental actions.

It is necessary to recognize and advance in the policies of overcoming extreme poverty since, in many demonstrated situations, the Family Scholarship and Green Scholarship combination is enough to retire the families from this indigence situation. In other situations, this combination reaches positive results, keeping rural families in the poverty level.

References

- Dufumier M (2007) Agricultural Development Project - Experts Manual. *Translation Vitor de Athayde Couto. EDUFBA.*
- Machado GB (2011) Multifonctionnalité de l'agriculture familiale: la diversification des activités dans le *sertão* semiaride de l'État de Bahia (Brésil) [Multifunctionality of family farming: The diversification activity in the Semiarid Region of Bahia state (Brazil)] Saarbrücken (Alemanha): Éditions Universitaires Européennes.

MDA-Ministério do Desenvolvimento Agrário (2010) Plano Territorial de Desenvolvimento Sustentável do Território Chapada Diamantina, Bahia [Territorial Plan for Sustainable Development of Chapada Diamantina Territory, Bahia]. Ministério do Desenvolvimento Agrário (MDA), Coordenação Estadual dos Territórios (CET), Conselho de Desenvolvimento Territorial da Chapada Diamantina – CEDETER, Cooperativa de Profissionais em Assessoria e Consultoria Técnica – ASCONTEC. 2nd edn.

Petkova R, Margariteva V (2013) *Multifunctionality of Bulgarian Agriculture* 8(Suppl 3): 201-220.