



URBANIZATION, A CHALLENGE FOR FAMILY FARMING IN THE WESTERN PERIPHERY OF THE CITY OF ABOMEY-CALAVI (SOUTH BENIN)

VISSOH A. Sylvain¹ et ASSONGBA Yédjanlognon Fautin^{2&3}.

1- Laboratoire d'Etudes des Dynamiques Urbaines et Régionales (LEDUR), Département de Géographie et Aménagement du Territoire (DGAT), Université d'Abomey-Calavi (Bénin).

2-Laboratoire d'Ecologie Appliquée (LEA), Faculté des Sciences Agronomiques, Université d'Abomey-Calavi (Bénin).

3-Faculté des Sciences et Techniques (FAST), Université Nationale des Sciences, Technologies, Ingénierie et Mathématique d'Abomey (UNSTIM)

ABSTRACT

In most developing countries, family farming is the main form of organization of agriculture. It provides most of the supply of food crops to cities.

The aim of this research is to analyze the effects of urbanization on this form of agriculture in the western periphery of the city of Abomey-Calavi, particularly in the Glo-Djigbé district.

This work has mobilized several research techniques and tools, in particular documentary analyzes and direct field observations, to which were added a series of interviews and surveys combining qualitative and quantitative approaches: 175 households investing in family farming were interviewed; two agents from the Regional Action Center for Rural Development (CARDER) are also interviewed.

The results obtained from the processing of the collected data were analyzed according to the SWOT or FFOM (Strengths-Weaknesses-Opportunities and Threats) model.

At the end of the analysis, it is noted that two modes are mainly used to access agricultural land in the borough: purchase (47.80%) and inheritance (46.10%). Production is carried out in monoculture (55% of agricultural households) or in combination crops (45% of agricultural households). Despite the borough's agricultural potential, family farming is increasingly threatened by urbanization: ten years ago (1995-2010), a 25% re-conversion of plantations into a dwelling was noted. Built-up areas saw their proportion increase by 60% in the period.

Given the importance of this form of agriculture for agricultural households, it is important to frame urbanization through the development and implementation of a consensual Community Management Plan.

Key Words: Glo-Djigbé (Benin), family farming, urbanization, agricultural development.

Introduction

Family farming plays an important economic and social role. For FAO (2014), there are 570 million farms in the world, of which more than 500 million are family farms. The latter brings together family-based farming activities in relation to many aspects of rural development. It excludes agricultural activities whose direct actors are companies or investors (FAO, 2014). For Sencébé and Cazella (2015), family farming is essential both for food for the domestic market and for agricultural employment. Main form of agriculture, it is characterized by the use of an essentially family workforce: full-time workers are members of the same family and not wage earners. In addition to self-consumption, products from such a form of agriculture supply local, regional and even international markets. In such a form of agriculture, capital is inseparable from the family patrimony (Chauveau, 2007). According to Laplante (2014), the criteria of family farming concern the origin of the workforce, the control of the means of production and the free choice of the exploitation strategy (types of production, practices crops, farm size).

In Benin, agriculture is the bedrock of the economy, contributing to the food security of urban and rural populations and the provision of foreign exchange, thanks in particular to the dynamism of agricultural exports (FAOSTAT, 2013). Although in recent decades the contribution of agriculture to the formation of the gross domestic product has gradually declined, the agricultural sector continues to play a key role in providing jobs to the population. Nearly 70% of Benin's labor force works in agriculture despite its low wages (APRM, 2014). It is dominated by family-type farms that occupy about 95% of the country's agricultural land (MAEP, 2014). This type of exploitation, of modest size, is marked by a great diversity, according to the agro-ecological and socio-economic conditions. In fact, family farms occupy diverse environments and territories and thus demonstrate a great capacity for adaptation through their knowledge of the environment, the valorization of territories especially those which are fragile and inaccessible to industrialized agriculture (Ferraton and Touzard , 2009). It is a very useful form of agriculture for households in underdeveloped countries. Unfortunately, it is sometimes disturbed by certain facts such as urbanization; this is manifested by the development of built spaces and infrastructure (roads, stations, recreation centers, etc.) that encroach on agricultural and natural spaces. In these conditions, how to reconcile the development of family farming and the need for urbanization? The present research will attempt to answer this question, after having characterized the system of family farming in the western periphery of the city of Abomey-Calavi and indicated the effects that this form of agriculture undergoes due to urbanization.

1. Data and methods

1.1 Geographical scope of the study

This research focuses on the Arrondissement Glô-Djigbé, located in the western periphery of the city of Abomey-Calavi. With an area of approximately 100.79 km² (INSAE, 2013), this district is between 6 ° 30 and 6 ° 36 north latitude and 2 ° 15 and 2 ° 21 east longitude. It is bounded on the north by Tangbo-Djèvié and Zinvié districts, on the south by those of Ouèdo and Togba, on the west by the commune of Torri-Bossito and on the east by the Arrondissement of Akassato (figure 1). This district is chosen because it knows an important agricultural development (food production, pineapple cultivation) and a rapid urbanization these last years. The Arrondissement Glô-Djigbé is, in fact, selected to house a world-class airport designed to unclog the one in Cotonou. In addition, it is located about twenty kilometers from the dry port of Allada, built to serve the countries of the hinterland (Niger, Burkina Fasso, Mali) from the port of Cotonou. The borough therefore offers an interesting case of analysis of the confrontation between the pursuit of agricultural development, on the one hand, and urbanization, on the other.

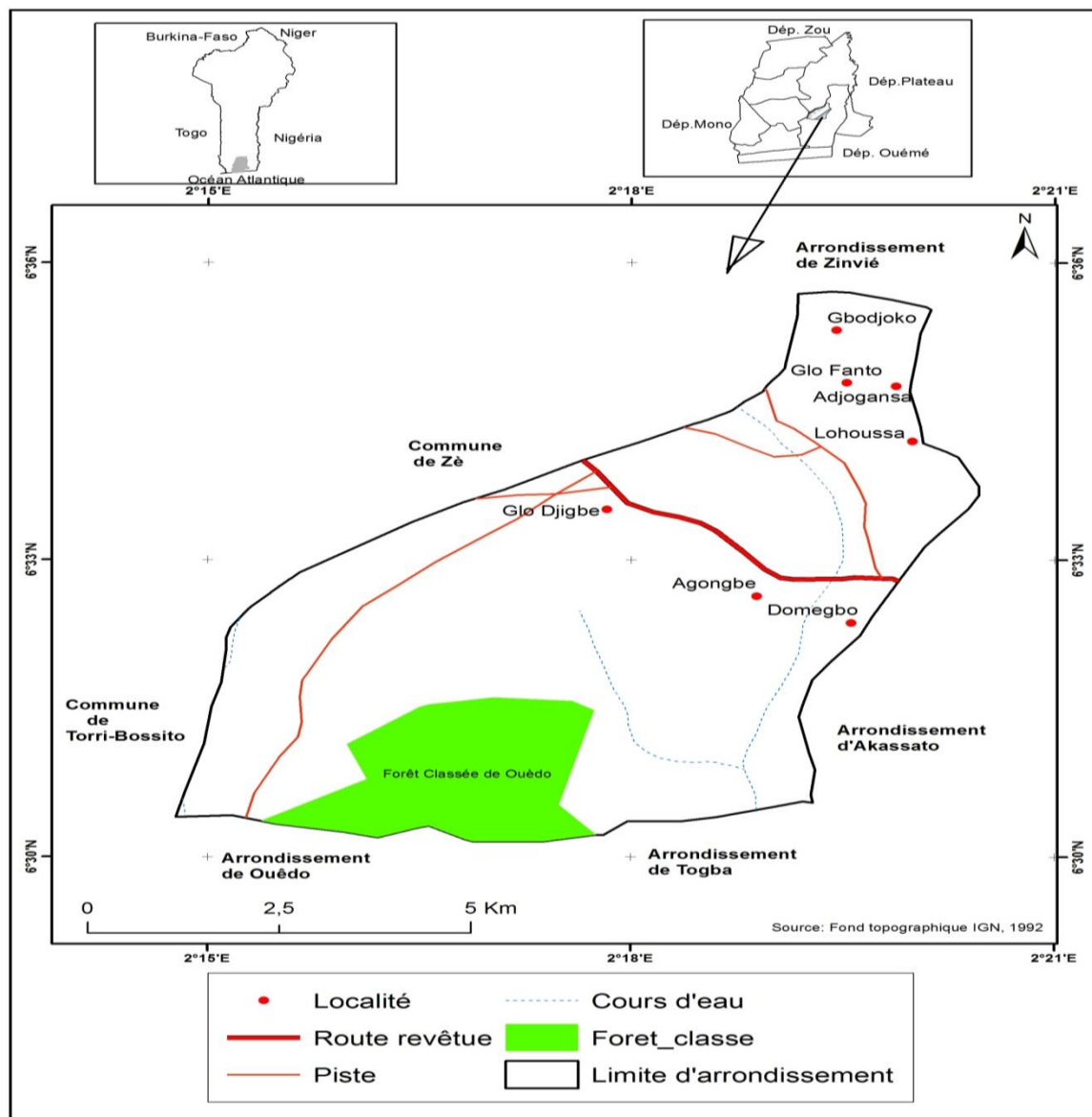


Figure 1: Geographical location of the study area.

1.2 Nature of the data collected

The data collected in the framework of this research concern the socio-economic profile of the agricultural households of the Glô-Djigbé district, the nature of the cultivated practices, the modes of access to the land, the effects of urbanization. on land occupation, etc.

1.3 Techniques, materials and tools for data collection

In order to collect the information necessary for the treatment of the research subject, the route method was adopted, which made it possible to identify the main actors on the one hand and resource persons and farmers on the other. In addition, direct observation made it possible to understand the difficulties faced by producers. Data were collected from producers using questionnaires.

In order to be representative of all producers, the choice of respondents was made taking into account the gender, language group, age and activity in the community. The number of producers selected was determined using the Dagnelie formula (1998):

: is the total number of people surveyed, $U_{1-\alpha / 2}$ is the value of the normal random variable for a probability value; for $\alpha = 0.05$, $U_{1-\alpha / 2} = 4$; p: is the proportion of agricultural households in the borough, d: is the margin of error allowed. For this study we took $d = 5\%$. Calculating the size of our sample gave $n = 175$ people

1.4 Treatment of collected data and analysis of results

At the end of the field investigations, a manual tabulation of the survey cards was carried out. The recorded data has, according to its nature, undergone a content analysis or a computer processing with Excel 2013 spreadsheet and QGIS 2.14.3 software for the production of tables and figures (maps).

The SWOT or FFOM (Strengths-Weaknesses-Opportunities and Constraints) model allowed to analyze the results resulting from the data processing.

2. Results

2.1 Factors Favoring Agricultural Production in the Borough of Glo-Djigbé

2.1.1 Climate

The Borough of Glo-Djigbé enjoys a subequatorial climate with alternating two dry seasons (December to March and August) and two rainy seasons (April to July and September to November). The average monthly precipitation exceeds 170 mm (Figure 2).

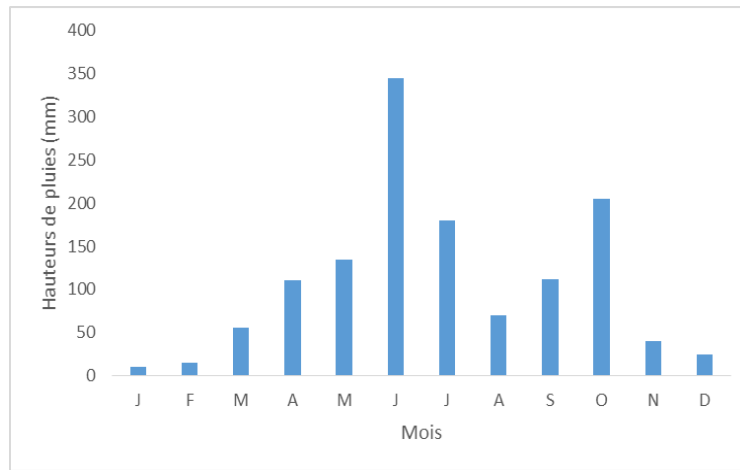


Figure 2: Average rainfall regime at Glo- Djigbé (1975 - 2015)

Source: ASECNA, 2016

The analysis of Figure 2 allows to note that the rains are particularly abundant in May, June, July and October. It is thus a bimodal regime, with two points of unequal importance (Houndakinnou, 2014). Mean annual temperatures vary between 27 and 31 ° C. The minima never go below 15 ° C. The differences between the coldest months do not exceed 3.2 ° C in this district (ASECNA, 2016). The borough's climate therefore offers immense agricultural potential as its characteristics are favorable for the production of several crops, both food and cash crops (CARDER, Atlantique, 2016).

2.1.2 Relief and soil

The relief of the district of Glo-Djigbé is very little accident. It presents for the whole a plateau of bar ground, with deep soils but easy to work. These soils have good physical characteristics that allow good root system development of crops (CARDER, Atlantic, 2016).

2.1.3 Population Dynamics and Farm Households

The data of the General Census of Population and Housing (RGPH) of March 2013 indicate a population of 28,103 inhabitants for the Arrondissement Glô-Djigbé. This figure was 12,827 in 2002 (INSAE, 2003). The number of farm households was 826 in 2002; it increased to 1993 in 2013. This strong growth of the population and the number of farm households makes this borough a locality with a strong agricultural human potential.

Whether on a physical or human level, the Borough of Glô-Djigbé offers favorable conditions for agricultural production.

2.2 Typology of family farming in the Borough of Glo- Djigbé

2.2.1 Modes of access to agricultural land

Field investigations have identified four modes of access to agricultural land in the borough. Figure 3 allows to appreciate the relative importance of the different modes.

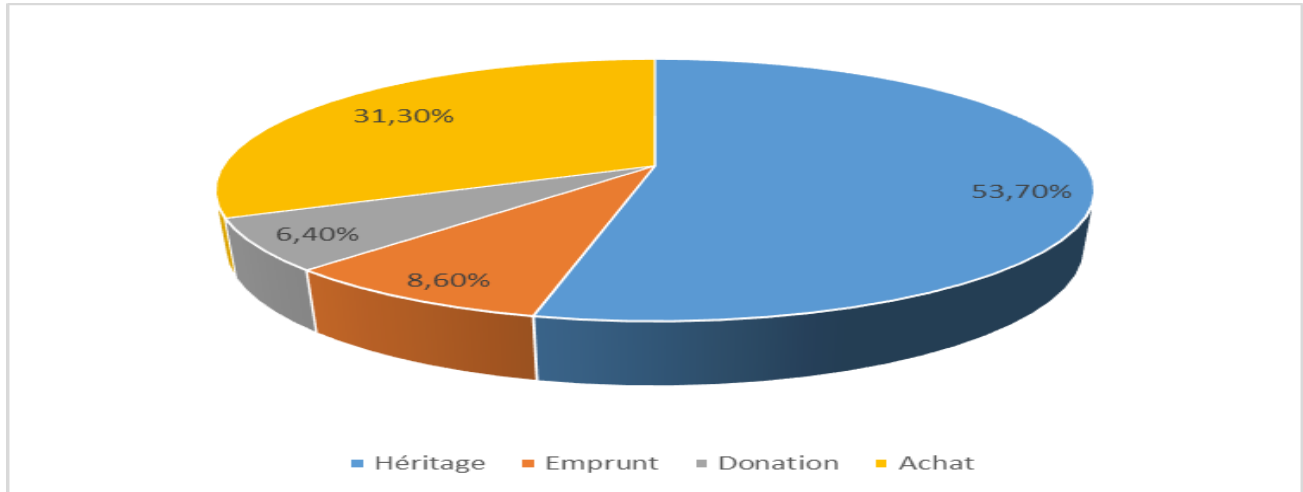


Figure 3: Modes of access to agricultural land in the Glô-Djigbé district

Source: Survey Results, February, 2017

The analysis in Figure 3 shows that inheritance (53.70%) is the most important mode of access to agricultural land in the borough. It is followed respectively by the purchase (31.30%), the loan (8.60%) and the donation (6.40%). When we compare these results with those obtained by Glèlè (2010), we realize that part of the land acquired by purchase is not used for agricultural purposes. In fact, Glèlè's (2010) analysis of access to land shows that they are in a proportionality relationship different from that of agricultural land (Figure 4).

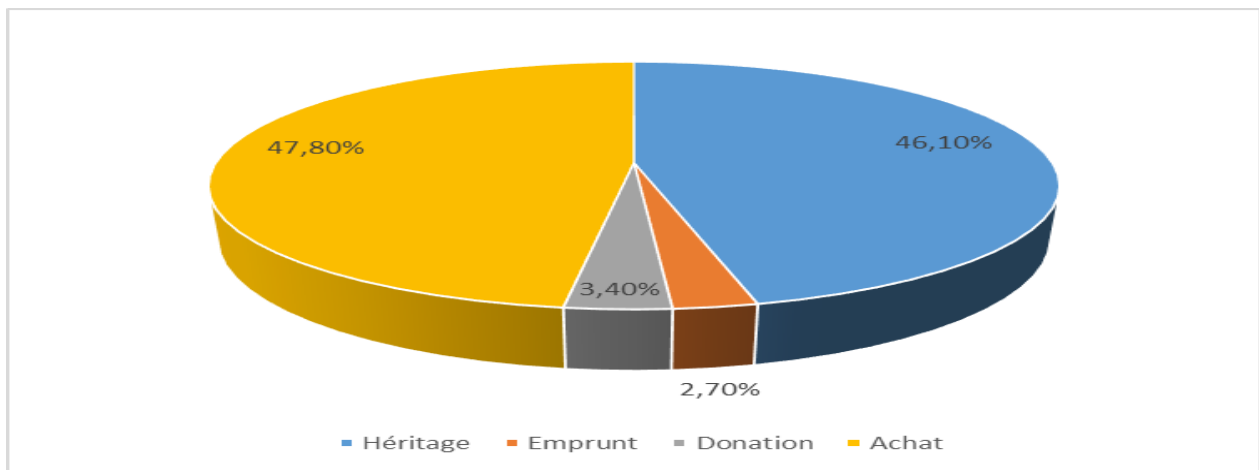


Figure 4: Modes of access to land in the Borough of Glô-Djigbé

Source: from Glèlè (2010)

This figure 4 shows that on all of the Arrondissement's lands, two modes of access are mainly observed: purchase (47.80%) and inheritance (46.10%). The loan and the donation are in infirm proportions. In reality, inheritance was the main mode of access to land; it is today in decline because of the mutations induced by the public investments mentioned above (construction of airport and dry port). As a result of these investments, the land has seen its value increase and many heirs have sold it to townspeople from the cities of Cotonou (the economic capital of the country) and Abomey-Calavi (the capital of the municipality where the Borough of Glo-Djigbé is located). Some buyers, unable to develop their land, have lent to the inhabitants of the district to practice agriculture.

2.2.2 Cropping systems

Two cropping systems are practiced in the Borough of Glo-Djigbé; they are monoculture and the combination of cultures. Monoculture is characterized by the practice of a single crop on the plot. It is dominated by maize, okra, pineapple, cassava, chili and tomato. It is practiced by farmers with relatively large means (agricultural land, labor, etc.). These producers use almost all chemical fertilizers (NPK and Urea).

The second system of production is the association of cultures. It involves sowing several crops on the same plot (photo 1): 45% of the producers practice this cropping system. For these producers, the crop association allows risk sharing. Indeed, the diversity of species on the same plot promotes a more efficient use of available water, nutrients and light because of the different root depths and different heights and architectures of the plants. The spread of diseases and insect infestations are limited. This system also saves labor, financial resources and land. The uncontrolled development of weeds is also greatly reduced. But the yields of different speculations are often low.



Photo 1: Partial view of a peanut / maize crop association

2.3 Threats against family farming

Family farming is increasingly threatened in the Borough of Glô-Djigbé. First, there are climate disruptions that are causing more and more delays in starting the rainy season in the area. In addition, the number of rainy days is also reduced. More seriously, there is a decline in the area cultivable in favor of built or hoarded spaces. Figures 5 and 6 show the dynamics of land use between 1995 and 2010.

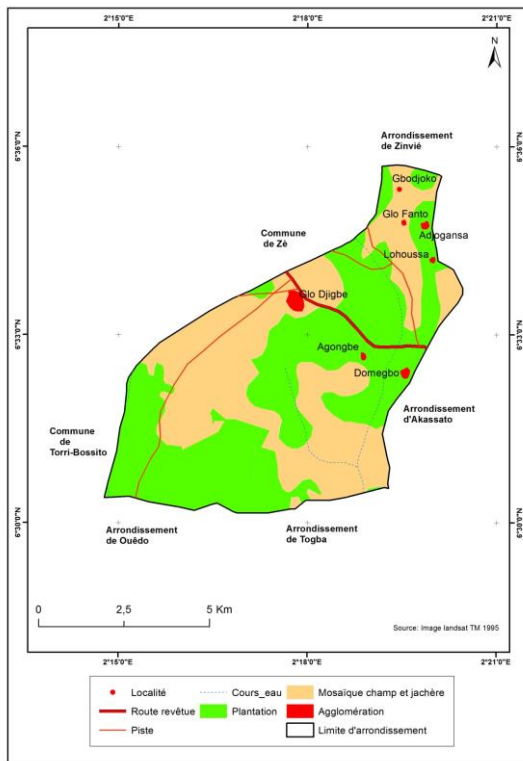


Figure 5. Occupation of village terroirs in Glo-Djigbé district in 1995

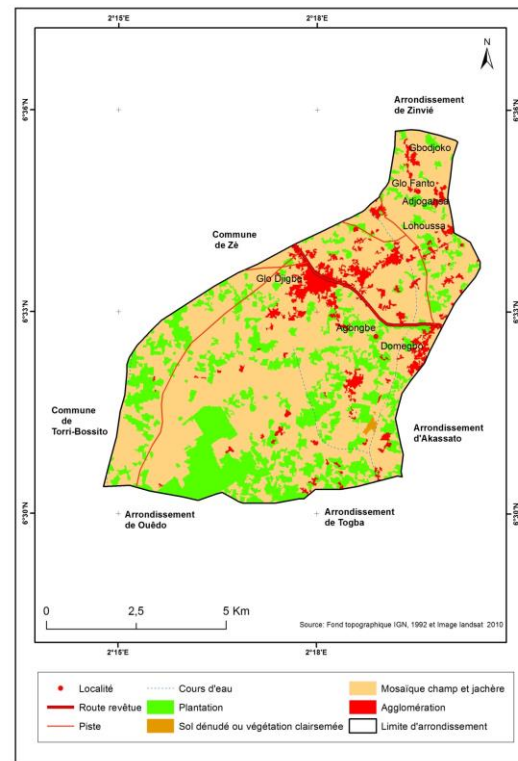


Figure 6. Occupation of the village terroirs of the Glo-Djigbé district in 2010

These two figures show a decline in plant cover, especially plantations, for fields and fallows and housing. These are particularly concentrated along the National Inter-State Road Cotonou-Parakou (RNIE 2). What is called fallow land is actually land purchased from the heirs producers by townspeople and which are intended to be inhabited or resold later. These lands are therefore removed from agricultural production. This state of affairs contributes to the considerable reduction in the productive capacity of family farming. Thus, we note a conversion of 25% of plantations into housing. Overall, all the units of land use experienced a regression except the agglomerations which saw a progression of the order of 60% due to the housing needs of the new arrivals coming from the cities of Abomey-Calavi and Cotonou.

3. Discussions

The results of this study show that the Borough of Glô-Djigbé has significant potential for agricultural production. But because of the geographic location of this borough and the public investments that are made there, the practice of agriculture is more and more threatened. This finding was also made by Gnimadi et al (2014) concerning agricultural production on the Allada plateau (in south-eastern Benin) where cities "phagocyte" agricultural areas. Even in the presence of laws protecting these agricultural areas, circumvention is often observed in their application. According to Valette and Dugué (2017), the agricultural area annually consumed in Morocco by the different forms of urbanization is estimated at 4,000 hectares, of which 2/3 for real estate operations, despite the town planning law advocating the principle preservation of highly productive agricultural land, and its translation into local planning and development documents.

For Benabed et al (2014), peri-urban agriculture is often treated by agricultural policies as if it were in a strict rural environment, without taking urbanization and population growth into account, and no tools are available. put in place to maintain it or accompany its disappearance. According to this author, priority is often given to housing construction with little regard for the preservation of undeveloped spaces on the outskirts of cities (cultivated areas or green spaces). According to François et al (2013), such a situation is observed because the development plans of urban municipalities are often made without consultation with farmers and urban dwellers; which brings great economic and social damage to landowners and developers.

In a study of the city of Muea in southwestern Cameroon, Parrot et al (2015) showed that because of the increased food needs of cities because of their growth, it is more than necessary to support family farming through its intensification. According to the United Nations (2014), the ratio of urban to rural population is changing in sub-Saharan Africa: from 0.2 in 1950 to 0.68 in 2005, and should be around 1.4 in 2050. In these conditions, only the intensification of family farming will make it possible to sustainably meet the growing demand of cities for food products. The working population of family farms will therefore have to be supported by the development and implementation of genuine agricultural policies that respect the environment.

Conclusion

Urbanization is an inescapable fact; it often manifests itself in underdeveloped countries through urban sprawl. In the absence of consensual and operational urban planning, urbanization presents itself as a reducing or even destructive factor of the agricultural potential of peri-urban areas. The example of the peripheral district of Glô-Djigbé and those analyzed by the various authors who have worked on this issue, expose the need to preserve agricultural land through the development of a master plan and municipal development. (SDAC) with a Master Plan of Urban Development (SDAU). Such tools developed in a participatory and inclusive approach will delineate the areas to be urbanized and those intended for agricultural production. Urbanization is not to be curbed; it is in most cases an opportunity for agricultural producers, as long as they organize and develop the capacity to meet the urban food needs.

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