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DIVERSITY AND SUSTAINABILITY OF PERI-URBAN AGRICULTURE: CASE OF THE CITY OF RABAT

| Fatiha Hakimi * |

Hassan II Institute of Agronomy and Veterinary Medicine | Department of Production, Protection and Plant Biotechnology | Agronomy Unit |Rabat | Morocco |

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ABSTRACT

Background: In almost every city in the world, peri-urban agriculture area is under the pressure of urban growth not only in terms of space consumption but also in terms of loss of its own agricultural coherence. It therefore experiences a change of nature, which forces it to fall back or even to disappear if its space continues to decrease. **Objectives:** This study focuses on the role of peri-urban agriculture in supplying the metropolis of Rabat, but also on the diversity of its other functions (economic, social and environmental) and on its sustainability. **Methods:** Through purposive and stratified random sampling methods, 50 respondents were selected. Data collection from farmers was based on field observation, interviews and field surveys. Descriptive statistics such as frequency distribution, Chi-square test, tests of normality and homogeneity of variances and Principal Component Analysis (PCA), were used. **Results:** Peri-urban agriculture in Rabat metropolis is characterized by the specificity and diversity of its production and cultivation systems. Peri-urban farms are mostly familial and small, managed by a very experienced old population, who derive income from them, in either full or in addition to other activities of household members. The most dominant speculation is vegetable crops followed by arboriculture, cereals, leguminous and some livestock rearing such as beef, sheep and poultry farming. However, the recent rapid urban growth is disrupting the traditional structures of peri-urban agriculture; it suffers from many disadvantages of its urban neighborhood and experiences multiple operational difficulties: precariousness and cost of labor force; absence of laws regulating this activity; lack of training and technical supervision of peri-urban farmers and shortage of water resources. **Conclusion:** Research, particularly in agronomy and economics, can provide answers to reduce these constraints and strengthen the positive impacts of peri-urban agriculture on the fringes of the metropolis.
Keywords: *Peri-urban agriculture, sustainability, diversity, Rabat.*

1. INTRODUCTION

What may seem like an oxymoron [1], particularly to the ears of the Moroccan population, finds its roots in the history of Arab town planning: inspired by the model of Andalusian towns which fed on the gardens of the surrounding plains, the Arab towns were surrounded by fields and vegetable gardens which ensured their food supply and with which they maintained strong links.

It was during the 20th century with the strong advance of urbanization that the agricultural belt saw itself pushed further and further [2].

In Rabat, population growth and urban sprawl induce high consumption of peri-urban agricultural areas, an increase in food demand, unemployment and environmental degradation. This urbanization has therefore increased the importance of peri-urban agriculture with regard to employment and food security for the inhabitants of the metropolis. It has multiple benefits for the city, its inhabitants and its climate. By creating jobs, generating income and ensuring a healthy food intake, peri-urban agriculture contributes to improving the living conditions of vulnerable populations and contributes to food sovereignty and the economic dynamism of the region by relocating food production and developing short circuits.

In view of the challenges accompanying the growth and even the megapolization of the city of Rabat, and like the large cities of the world, peri-urban agriculture seems to provide convincing answers in the social, economic and environmental fields.

Few systematic studies have been carried out on peri-urban agriculture in Rabat and in Morocco in general. However, the continued growth of the metropolis indicates that a broader and more systematic understanding of the PUA is necessary to determine its importance and to help determine the best way to develop this type of agriculture in order to contribute to sustainability and food security for the city and the country in the future.

The current study examines the situation of peri-urban agriculture on the fringes of the metropolis and aims to characterize the actors, the types of farms and crops, the production systems and techniques, the products obtained and the income generated by this kind of agriculture.

The major considerations pointed out by the study are: the potentials and constraints of the peri-urban agriculture in Rabat, the situation of the peri-urban householders and the agricultural land, the high urban pressure and its consequences, and the need to define the place of the peri-urban agriculture in the sustainable development of the city.

2. MATERIELS AND METHODES

Using selective and stratified random sampling methods, five study zones were chosen and 50 respondents were selected. The study area was delimited to a radius of 40 km from the urban core of the city of Rabat in order to remain within the peri-urban perimeter while ensuring the presence of farms with the majority of existing speculations in the region. Data collection from farmers was based on observations, interviews and field surveys. For this, a questionnaire of a series of 83 questions was developed and administered to the selected farmers.

The collected data were interpreted using appropriate data analysis techniques. The data collected through questionnaire are quantitatively tabulated, interpreted and presented by using stastical methods such as frequency distribution, Chi-square test, tests of normality and homogeneity of variances, means comparison test and Principal component analysis (PCA). The analysis is made by using SPSS version 26 (Statistical Package of Social Sciences, V26.0) and Ms Excel.

3. RESULTS AND DISCUSSION

In many countries around the world, urban farmers are women, whose primary motivation is to provide food for their families. While in some sub-Saharan countries, urban agriculture - as well as subsistence farming - is often synonymous with female agriculture [3], it is quite different in Rabat and Morocco in general. Rural, urban or peri-urban agriculture remains mainly a men activity. According to the exploratory analysis of socio-demographic data, all respondents are men and 64% of them are aged 51 and over. The study shows that the majority of the farmers have 20 years of experience or more (76% of the surveyed population). Therefore, the agriculturalists in the five study areas are mostly very experienced elderly people (Figure 1).

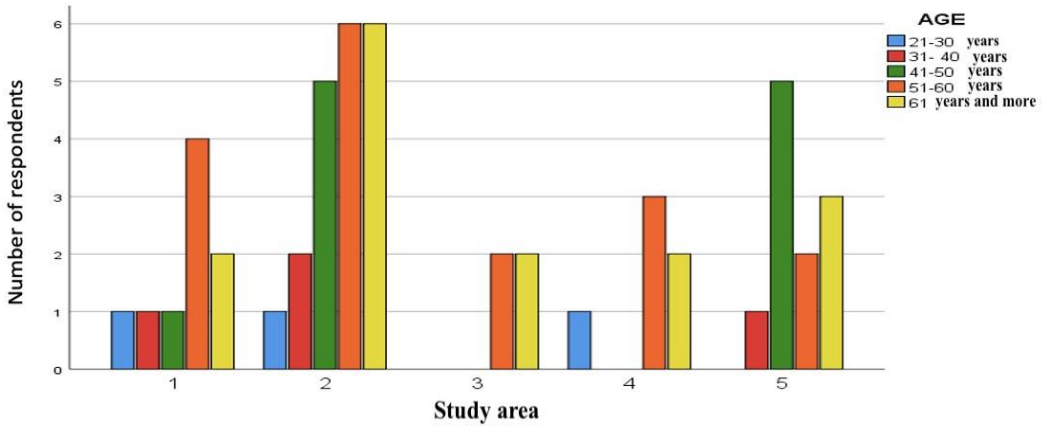

Figure 1: The figure presents the age classes of the respondents in the five study zones.

Regarding the motivation of farmers to do peri-urban agriculture, 46% of them practice this agriculture because of poverty and unemployment. Peri-urban agriculture appeared to be the main source of income for 78% of the households interviewed, which indicates its important role for urban livelihoods as well as for employment opportunities. According to a study carried out in Dar Es Salaam, Tanzania, peri-urban agriculture provided an estimated 20% of all jobs in the town [4].

The results of the surveys reveal that 80% of the surveyed population did not go beyond secondary education and that none of the visited farmers has received a technical guidance from the concerned organizations.

Regarding the analysis of variables relating to the mode of acquisition of land and the area cultivated in the five study areas, the results indicate that the" Melk" is the most dominant mode of acquisition (96%) and that 48% of the visited farms are small familial ones that occupy only 0 to 3 hectares (Figure 2).

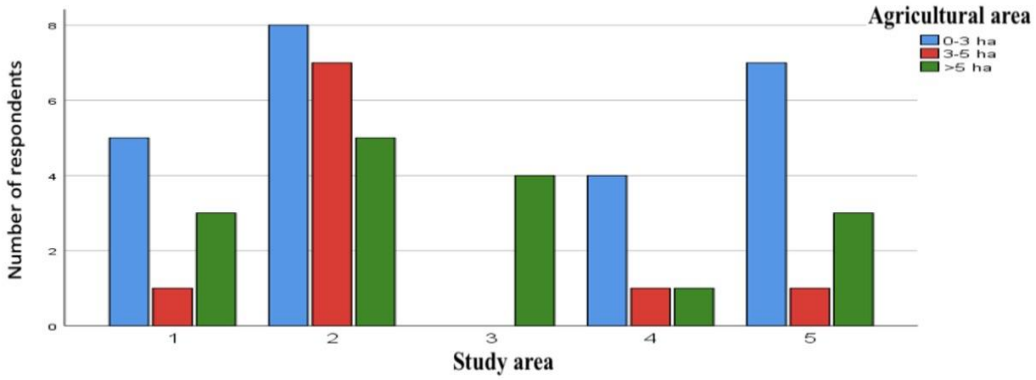

Figure 2: The figure presents the area classes of the surveyed farms in different study zones.

All surveyed farmers affirm that agricultural land in the outskirts of the metropolis has been declining continuously for the past two decades. The peri-urban agriculture of Rabat therefore risks continuing its spatial regression. The land needs to meet urban socio-economic demand have made it very difficult to exercise agricultural activity and have led to a decline in agriculture in peri-urban areas [5]. In such a situation, there is a need to better reflect on the solutions to be adopted to preserve this activity.

Concerning the results of the analysis of types of activities and cropping systems, the study confirmed that the most dominant speculation is vegetable crops followed by arboriculture, cereals and leguminous (Figure 3).

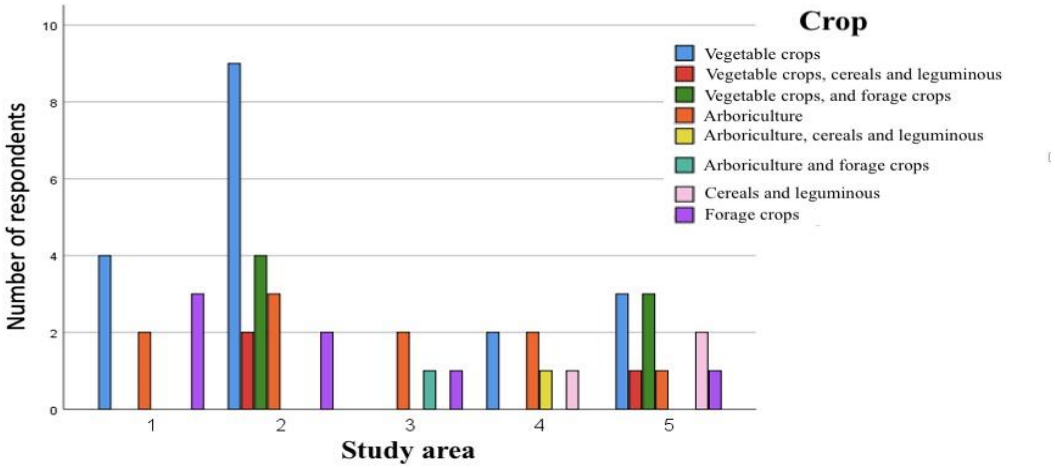

Figure 3: The figure presents the Speculations practiced by the respondents according to the study area.

The survey result reveals that livestock is a practice less regarded by farmers in the region: 54% of respondents do not practice livestock while 46% who do it have only a small herd. In general, the most common types of livestock farming practice in the study area includes: beef farming, sheep farming and poultry farming practices. Such types of farming activities are kept in both peri-urban and rural areas of the country for various uses including milk and milk products, meat, eggs, food, cash and various cultural uses [6].

4. CONCLUSION

The current study confirms the multifunctionality of peri-urban farming since it contributes to the economic development of the metropolis by creating jobs and generating income for farmers, it contributes to the food supply and environmental beatification of the city. Jouve and Padilla (2007), who demonstrated that the peri-urban agriculture offers several functions such as food, socio-economic, environmental and territorial services, confirmed the same results [7].

This agriculture, by preserving open spaces within cities, creates favorable conditions for the existence of sustainable cities [8].

The comparative advantages of peri-urban areas are especially the ease of access to the market and the access to some organic inputs such as manure. Nevertheless, peri-urban agriculture in the fringes of the metropolis still faces several constraints: legal constraints mainly linked to the absence of laws regulating this activity and technical constraints such as the lack of training and technical supervision of peri-urban farmers. The research, especially in

agronomy and economics, can provide answers to reduce these constraints and reinforce the positive impacts of peri-urban agriculture.

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