



Competition perennial crops and rice growing in lowlands in Sérihio in the department of Gagnoa (Côte d'Ivoire)

Kotchi Koffi Joachim

Geographer, Researcher at Center of Recherche in Ecologie (CRE), University Nangui-Abrogoua, (Côte d'Ivoire)

Abstract

The Goh region is one of the ten (10) major rice production centers in Côte d'Ivoire. Rainfed rice cultivation, practiced mainly on the plateaus, is the dominant type of rice cultivation. Irrigated rice cultivation is practiced in the lowlands. However, the observation is that the lowlands are increasingly used by the populations for perennial crops, in particular rubber and palm oil. That observation motivated this study, which aims to understand the reasons for the presence of these perennial crops in the lowlands of Sérihio. To do this, the methodology adopted for this study combined documentary research and field investigation. The documentary research consisted in the exploitation of various documents. The field survey was divided into two phases. First, there was the pre-survey phase, which consisted of identifying the spaces where the phenomenon under study is observed. The second phase consisted of interviews with agents of ANADER and Gagnoa agriculture and then the administration of a questionnaire to 30 farm managers selected by the accidental method. The analysis of the data collected shows that in 80% of the cases observed, perennial crops develop in the lowlands to the detriment of rice cultivation. The farmers concerned justify this dynamic of the occupation of the lowlands by the scarcity of uplands for plantation crops. The consequence of this evolution in the occupation of lowlands is the increase in food prices and the resurgence of land disputes.

Keywords: competition, perennial crops, rice growing, lowlands

Introduction

In Côte d'Ivoire, domestic production of milled rice, estimated at 1.3 million tons in 2016, meets about 50% of the national consumption needs of about 2.6 million tons of milled rice (ONDR, 2017; USDA, 2017). To make up the deficit, the country resorts to massive imports, peaking in 2012 at more than 1,200,000 tons of milled rice costing more than 200 billion FCFA. Given the global fluctuations in rice prices that make regular rice supply problematic (Lançon *et al.*, 2004), the development of local rice production appears to be an alternative solution to prevent domestic rice shortages which can create social upheavals such as those of 2008 (Abbott *et al.*, 2008; Lerin and Louafi, 2012). Self-sufficiency in rice can only be achieved by improving the level of domestic production through the development of lowland rice cultivation. Indeed, lowland rice cultivation (developed and undeveloped) accounts for about 36% of the total area under rice cultivation in Côte d'Ivoire and contributes to more than 20% of paddy production (ONDR, 2012). However, it is clear that the lowlands are increasingly occupied by cash crops and this situation compromises food security. The question that arises is: Why do the people of Sérihio grow cash crops in the lowlands? This study is based on the specific case of the Sub-Prefecture of Sérihio in the Department of Gagnoa. The study is a contribution to the understanding of the transformation of the rice-growing area. The aims are to show the extent of the phenomenon, to explain the reasons

why people are growing cash crops in the lowlands, and to show its consequences.

Materials and Methods

Several reasons account for the choice of the Sérihio sub-prefecture (Figure 1) to conduct this study. First, the sub-prefecture of Sérihio alone has 44,000 inhabitants out of a total population of 277,000 in the Department of Gagnoa (source, RGPH 2021). It is therefore one of the most populated localities in the Department of Gagnoa. In addition, this locality has several hectares of lowlands used for rice cultivation, making local rice the leading food crop. The data collection took place from 20 to 24 of July, 2022. During our stay, we had discussions with the customary and administrative authorities of Sérihio. After the interviews, we went to observe the farms in the field in order to better understand the phenomenon. While visiting the different sites, we managed to interview 30 people met accidentally on the visited perimeters using a questionnaire. After our stay in Sérihio, we also interviewed officials from the ANADER and the Agriculture Department in Gagnoa. In total, we interviewed 42 people, distributed as follows: 10 people from the notability, the Anader and Agriculture officials in Gagnoa, and 30 farmers.

As far as the equipment is concerned, we used our cell phone to take pictures and a GPS to locate the villages and georeferenced the farms.

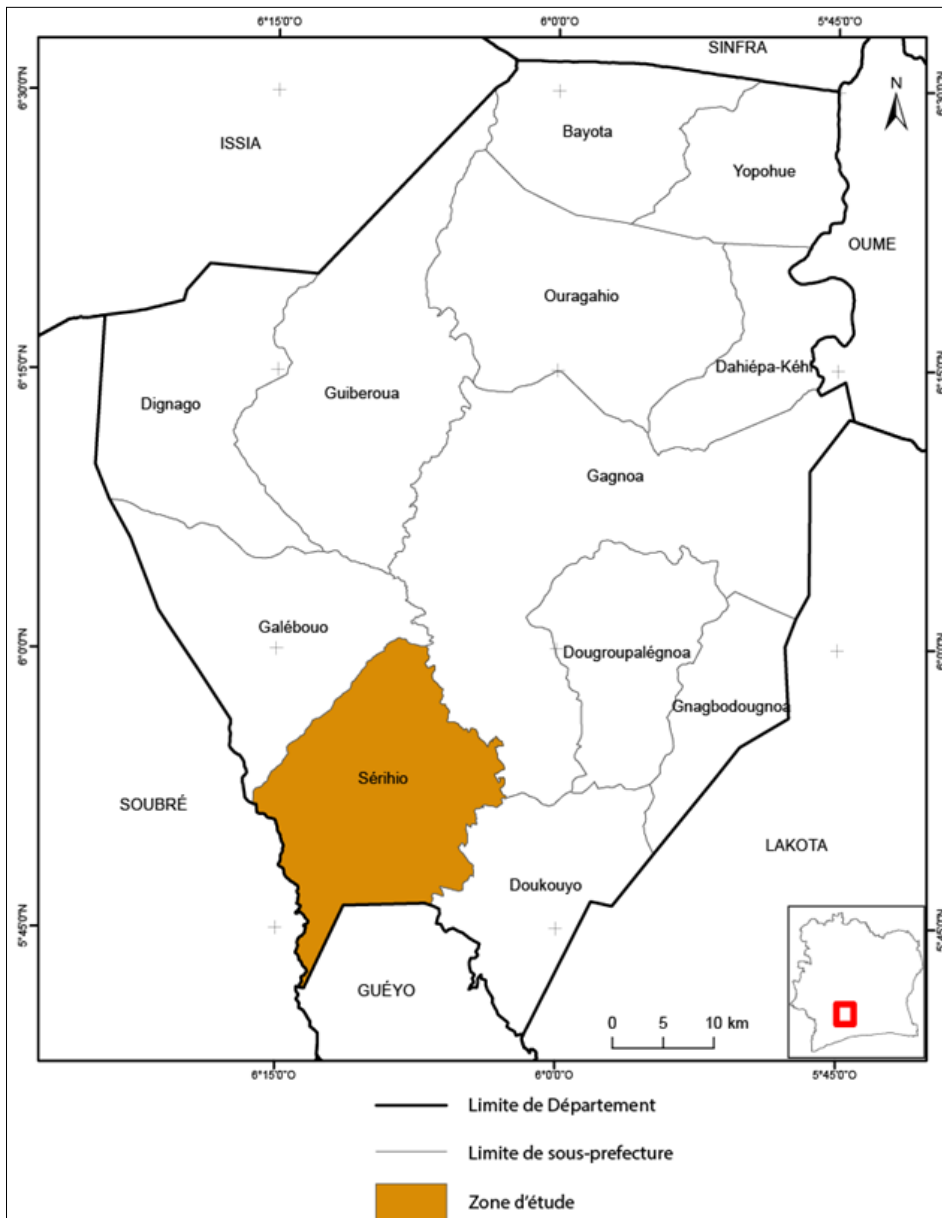


Fig 1: study area location map

Results

1. The lowlands in Sérhio are occupied by both cash crops and rice

Field observation showed that cash crops and rice compete for space, as shown in photos 1 and 2.



Photo 1: a 5 ha lowland occupied by a rubber tree plantation and rice



Photo 2: a 1.5 ha lowland occupied by rice and oil palm

Photo 1 shows a lowland of 5 hectares occupied by both rice and rubber. Some of the lowlands have been occupied by rubber cultivation for a long time. Indeed, the experiment started with rubber tree cultivation but did not prosper because the cultivation of rubber trees in the lowlands is much more demanding. Only 13% of respondents practice rubber cultivation in combination with rice cultivation. If the introduction of rubber cultivation in the lowlands of Sérhio seems to be a distant experience, this is not the case with palm. Indeed, 70% of the respondents said that they had introduced the palm tree in the lowlands at the beginning of the years 2017-2018. On the ground, we observed that most of the plantations are indeed young, as shown in photo 2, with the exception of a few plantations that are older. This means that the phenomenon is recent but is spreading rapidly throughout the department of Gagnoa, as shown on Map 2.

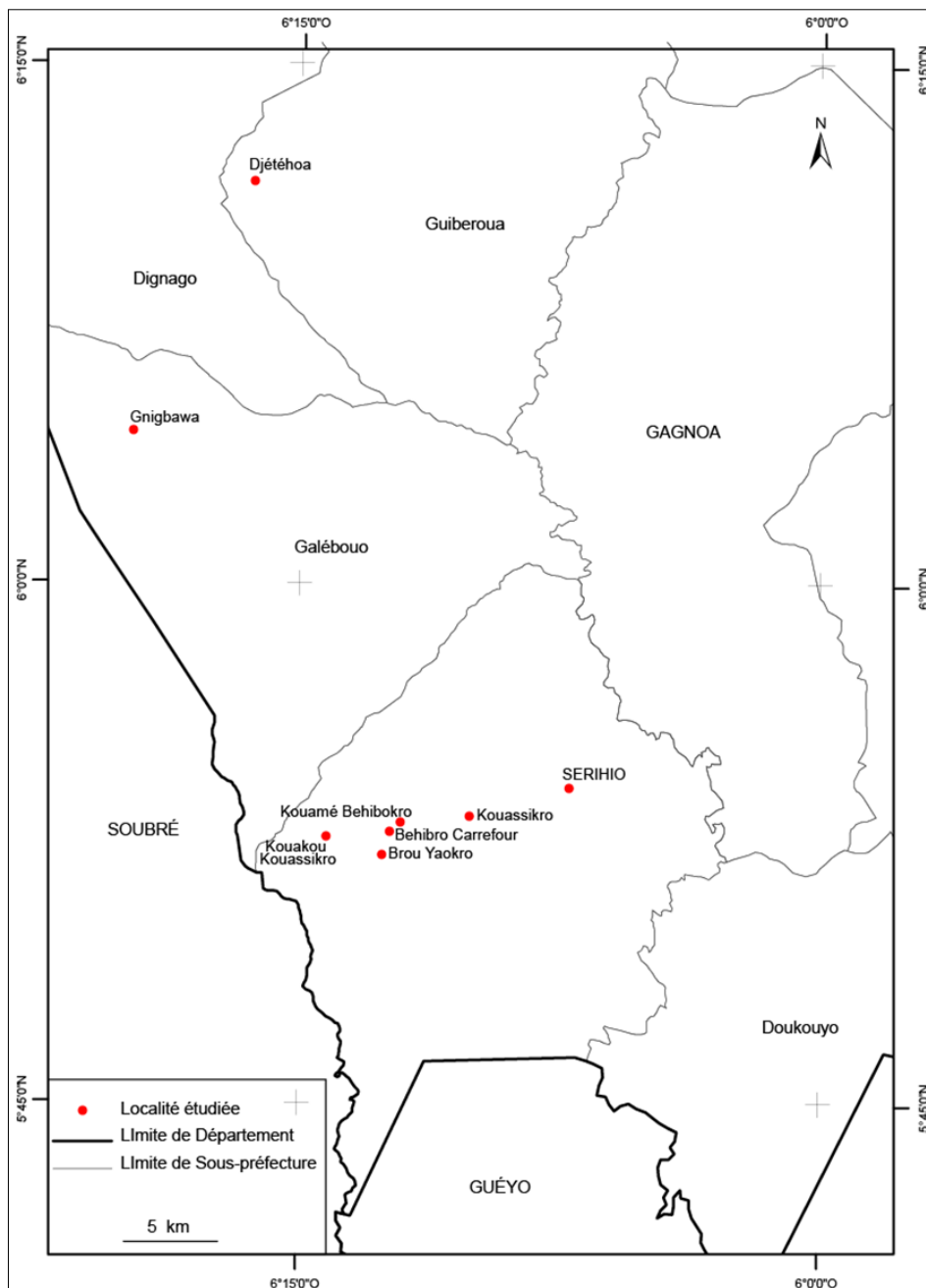


Fig 2: areas of lowland occupation by cash crops

Figure 2 shows that, apart from Sérihio, the phenomenon is observed in several localities in the department of Gagnoa. Indeed, according to the ANADER and Gagnoa's agricultural officials, the phenomenon is on the rise. Powerless before the situation and aware of the impact of the phenomenon on food security, they limit themselves to raising awareness, since there is no text stipulating that the lowlands are reserved for rice or market gardening. The farmers we met gave several reasons for this.

2. There are several reasons for the presence of perennial crops in the lowlands

The interviews and the questionnaire administered to producers showed that there are several reasons for the presence of cash crops in the lowlands.

2.1 Unavailability of new cropland on the plateaus

The occupation of lowland by cash crops in Côte d'Ivoire began with industrial companies such as the Société de Caoutchouc de Grand Bereby (SOGB) in Grand Béréby. Today, with the scarcity of plateaus due to land pressure for the exploitation of cash crops, lowland is the alternative to the land crisis. In fact, 67% of those interviewed said that they no longer had any cultivable upland. While with these farmers the areas of palm cultivated in lowlands vary from 0.5 to 5 hectares, this is not the case with industrial enterprises, which exploit vast areas of palm lowlands, as Table 1 shows.

Table 1: areas of palm lowlands exploited by industrialists

Companies	localities	Areas (HA)
Sogb	Galebre	800
Sivagro- Codipalm	Djetehoa (s/p of Guibéroua)	348
Tropaci	Dignago	30

Source: our survey

These large industrial groups, which were already exploiting lowlands in the southwest for oil palm, are now looking for new cultivable land.

2.2 Securing lowland lands

The other reason given is to secure lowland areas. This argument is put forward by both natives and non-natives. According to the natives, the land sales do not concern the lowlands. It is true that the land sold to non-natives sometimes includes lowlands. However, they are careful to prohibit the exploitation of the lowlands. In spite of this prohibition, the lowlands are either exploited by the new owner himself or rented by the latter to certain people. So to prevent him from exploiting it forever, the owner decides to give it to another person to cultivate the palm tree. Once the field is in production, they share it equally. It should be noted that the natives do not grow palm trees in the lowlands. They cede it to non-natives or to natives who take charge of cultivating it and then share the cultivated areas. According to the non-natives, the lowlands are part of the land transactions and that it is the natives who do not respect the clauses of the contract by willing to exclude the lowlands from the areas sold. So to secure their lowlands, they plant oil palm in order to obtain a land certificate and own their plots.

2.3 The search for new gains

Twenty percent (20%) of respondents say they grow oil palm in the lowlands to increase their income. In fact, according to them, the yield of cocoa fields has decreased due to climate change and soil impoverishment. In addition, they believe that rice cultivation requires a lot of resources because most of the lowlands being exploited are not developed.

The expansion of perennial crops in lowlands leads to land conflicts and higher costs for food products

The introduction of cash crops in the lowlands is accentuating land conflicts further. Indeed, some lowlands are being exploited for perennial crops without the knowledge of the landowner. When the landowner learns of this, he opposes. This situation can also be observed with industrial companies that sign transfer contracts with villagers but which are later contested. Conflicts are settled either at the village chief's, the sub-prefecture, or the courts. The impact of the use of the lowlands for cash crops has not yet been felt, as the plantations are still young, but in Sérihio it has already led to an increase in food prices. For example, a kilogram of local milled rice has risen from 375 to 450 CFA francs, a 100 kg bag of corn has risen to 25,000 CFA francs.

Discussion

Our study has shown that food security is undermined in Côte d'Ivoire and in the Goh region in particular due to the occupation of lowlands by cash crops. Indeed, lowlands have always been areas occupied by rice cultivation. This is also the case in Burkina Faso, where (MAAH MJ., 2006, 12p) ^[10] writes that "lowlands are mainly used for rice cultivation, although weed pressure is high at the beginning of the cycle and physiological adaptation difficulties can affect productivity. (RAUNET M, 1985_p181-201) ^[12] defines lowlands as the upstream portions of river systems, with a minor or unmarked bed, and are submerged for part of the year by the concentration of surface runoff and sometimes by the rise of the surface water table. They are often multi-purpose spaces. Historically, in Sudanian Africa, they were mainly used as dry season grazing areas with portions devoted to rice cultivation and dry season market gardening, where spectacular dynamics have been observed in peri-urban areas or along communication routes (Lavigne Delville, P, 1998, 8p) ^[7]. In Burkina Faso, lowland development policies began under the Sankara regime (1983-1987) in the Sahelian zones, with small dams and filtering dykes. The Sudanian lowlands have been the subject of increased interest over the past twenty years, and numerous rice-growing projects have been carried out by various development projects. In Côte d'Ivoire, the policy of developing lowlands began with the former SODERIZ between 1970 and 1977. With climate change, lowlands are perceived as opportunities to increase agricultural production and increase the resilience of family farms (AHMADI N. and TEME B., 1998 ; TOROU B. *et al.*, 2018 p22-26) ^[2, 14]. Burkina Faso has thusly embarked on a voluntary policy of developing lowlands, with the aim of achieving food independence and reducing climate risks. This same situation was observed in Côte d'Ivoire with SODERIZ, which developed several hundred hectares of lowlands for rice cultivation between 1970 and 1977. And this allowed Côte d'Ivoire to be self-sufficient in rice in

1977. The above and the results obtained in this work are useful arguments to bring the population to stop the phenomenon, but also to draw the attention of the government to take urgent measures in order to preserve the lowlands for rice development in Gagnoa. Indeed, as KOKOLA-ASSIENAN J., *et al.*, 2014; Diagne A., *et al.*, 2013, pp35-45) ^[6, 4] say, "rainfed rice cultivation, which is largely dominant in terms of surface area (more than 60%) and paddy production (80%), are increasingly being abandoned in view of certain challenges, in particular the problems associated with climate change". Faced with this situation, lowland rice cultivation appears to be the sustainable solution. This is why (NGARESSEUM D.K.T, 2009, 29p) ^[11] notes that "in 2007, irrigated rice cultivation in Côte d'Ivoire covered about 35,000 ha, i.e., 5% of the sown area, and accounted for 20% of national production". "It is the most mechanized system with the use of power tillers and intensified with the use of fertilizers and phytosanitary products," (TOSSAVI, 2015). Irrigated rice cultivation is the most efficient in terms of yield. Data from the ONDR (2015) indicate that yields vary between 3 and 10 t/ha. It is true that producers still have difficulty increasing production because of the partial mechanization of cultivation techniques. For (DEPIEU M.E, *et al.*, 2017, pp 79-92) ^[3], "weeds, pests, especially birds, mammalian rodents and insects, and insufficient financial resources are the most important constraints facing rice producers in Gagnoa. These difficulties make lowland rice cultivation unprofitable as indicated by (DEPIEU M. E., *et al*, 2017, op cit.) ^[3] who showed that "100 F CFA invested generates 18 F CFA and 34 F CFA of profit respectively lowland without irrigation and with irrigation. Both systems are therefore not very profitable under the current production conditions, which are marked by the inexperience of rice farmers and a low level of inputs use. In order to be much more competitive, it is important for farmers to form cooperatives in order to acquire equipments, as the cooperative promotes the creation of social links in the rural area where it is established and to be open to the outside world. In her article "Cooperatives, a good bad solution to women's vulnerability in Morocco", GILLOT G., (2016, 32p) ^[5], takes the example of a woman farmer in Bouknadel, a town located 30 km north of Rabat. For example, this farmer, head of a cooperative, was able to go to the annual International Agricultural Show in Meknes, in the north-central part of the country, and thus meet people she would never have met outside this framework. The testimony of this farmer, reproduced in Gaëlle Gillot's article, reflects this positive aspect of the cooperative. In a circular approach, AHROUCH S. (2011, pp 23-26) ^[1] shows that "the cooperative, when it is large enough and generates sufficient profits, can go further by reinvesting part of the profits it generates in the human development of the territory: education, training, transport, health (creation of care structures)". Thus, SOULAGE B. (1994, 223 p) ^[13] highlights the role that "politics" can play in this process. Political decision-makers could, for example, help to set up certain institutions which, although indispensable, are absent. "In this movement, decentralization is necessary insofar as it allows for an "organized regulation" of the productive system at the local level," (LIPIETZ A., 1990; LEBORGNE D. and LIPIETZ A., 1992, p 39-46) ^[8, 9].

Conclusion

The search for new arable lands for the extension of perennial crops and the difficult conditions for exploiting the lowlands have led the people of Sérhio to plant certain cash crops in the lowlands, notably palm and rubber trees. This situation poses real threats to food security in the Goh region if nothing is done to curb the phenomenon.

References

1. Ahrouch Saïd. les coopératives au Maroc: enjeux et évolutions, revue internationale de l'économie sociale, 2011:(322):23-26.
2. Ahmadi Nour, TEME Bino (eds). Aménagement et mise en valeur des bas-fonds au Mali. Montpellier (France): Cirad. [Google Scholar], 1998.
3. Depieu Meougbe Ernest, AROUNA Aminou et Doumbia Sékou. analyse diagnostique des systèmes de culture en riziculture de bas-fonds à gagnoa, au centre-ouest de la cote d'ivoire, 2017:29(1):79-92.
4. Diagne Aliou. AMOVIN-ASSAGBA Eyram, Futakuchi Koichi, WOPEREIS Marco, Estimation of cultivated area, number of farming households and yield for major rice-growing environments in Africa. In Realizing Africa's rice promise, Edite par M. Wopereis, D. E. Johnson, N. Ahmadi, E. Tollens et A. Jalloh, 2013, 35-45.
5. Gillot Gaëlle. les coopératives, une bonne mauvaise solution à la vulnérabilité des femmes au Maroc ?, 2016, 32.
6. Kokola-Assienan Juliette. Agboh-Noameshie Afiavi, DEPIEU Meougbe Ernest, Zado-Beugré., 2014. Evaluation des effets du changement climatique sur les systèmes riziocoles en Côte d'Ivoire: Aspects genre [Poster], 4^e semaine scientifique et 11^e assemblée générale du CORAF/WECARD, 16 au 20 juin 2016, Niger-Niamey
7. Lavigne Delville Philippe. Aménagement de bas-fonds, politique de l'aménageur et recompositions foncières. Le cas de Lofing au Burkina Faso, Cah. Agric., 2019:28(18):8.
8. Leborgne Danièle et Lipietz Alain. Flexibilité offensive, flexibilité défensive. Deux stratégies sociales dans la production des nouveaux espaces économiques, in: *Les régions qui gagnent*, Benko G, Lipietz A. (eds) PUF, Paris, 1992, 39-46.
9. Lipietz Alain. Le national et le régional: quelle autonomie face à la crise capitaliste mondiale ? in: la dynamique spatiale de l'économie contemporaine, Benko G. (dir), La Garenne Colombes, Editions de l'Espace Européen, 1990, 396.
10. Maah Mohd Jamil. Un manuel technique d'aménagement des *bas-fonds* au Burkina Faso, Annexe X: Projet D'aménagement Integre De Bas-Fonds, 2006, 12.
11. Ngaresseum Deuro Kan Toloum. Evolution de la production et des importations de riz en Côte d'Ivoire de 1965 à 2008. BUPED N° 08/2009; Bulletin De Politique Economique Et Développement (BUPED). Cellule D'analyse De Politiques Economiques Du Cires, 2009, 29.
12. Raunet Michel. Bas-fonds et riziculture en Afrique. Approche structurale comparative. L'Agronomie tropicale, 1985:40(3):181-201.

13. Soulage Bernard. La place du politique dans les systèmes productifs localisés, in: Industries, territoires et politiques publiques, Courlet C. et Soulage B (dir), L'Harmattan, Paris, 1994, 223.
14. TOROU Bio Mohamadou, Bossa Aymar Yaovi, Yameogo Thomas, YIRA Yacouba, SERPANTIE Georges. Exploitation agricole des bas-fonds: diversité des situations, contraintes et opportunités associées. In: WASCAL, ed. Projet « Gestion des nouveaux risques et des opportunités des terres Inondables pour l'Agriculture africaine (GENERIA) ». Rapport scientifique intermédiaire. Ougadougou (Burkina Faso): WASCAL, 2018, 22–26.