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Characterization of socio-land management modes of lowland areas in the Kyon municipality (Burkina Faso)

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ABSTRACT

Context and background

The mastery and control of rural areas remain a challenge for both landowners and the Burkinabe State. The major agricultural production basins, particularly areas with high exploitation of lowlands, experience permanent changes in production actors and land management strategies. This leads to the establishment of a multitude of access and exploitation rules aimed at better controlling all production chains. Therefore, what are the set of rules and principles that govern the exploitation of lowland in the study area? What are the changes in the management principles that govern the exploitation of lowland in the study area? What are the explanatory factors for this observed dynamic?

Goal and Objectives:

The main objective of this study is to analyze the different modes of social and land management of wetland landscapes in Kyon municipality (Burkina Faso).

Methodology:

The study is based on both quantitative and qualitative research methodologies. A total of 378 producers were surveyed using individual questionnaires. In addition, individual interviews were conducted with landowners and resource persons, as well as group interviews with some solidarity groups of producers

Results:

The results show an overall diversity and dynamics of management modes of lowland areas in the commune of Kyon. These exploitation sites are now the framework for a proliferation between management rules inspired by social values, and land and environmental management principles. This management mutation is mainly explained by the diversity of production actors in these submerged areas.

Keywords :

Lowlands; dynamics; socio-land management; Kyon; Burkina Faso

1. INTRODUCTION

Wetlands such as lowlands occupy a strategic place in rural economy. In addition to provide employment to the rural population during different crop seasons, they constitute an important source of food products. The various challenges presented by these environments (Doudoua et al., 2020) thus result in a dynamic management process for better control of land and water, the main resources of production. This highlights the multiple conflicts that arise between the stakeholders involved.

The Burkinabe rural environment derives its existence from the pre-established principles of society itself, such as moral rules, including customs. These management principles are thus transposed and applied to lowland areas, once occupied by the population itself. In addition to these community rules, new access and exploitation conditions have been developed concerning lowlands, plains, and hydro-agricultural developments (Hounsou et al., 2020; Kuper, 2011; Lavigne et al., 2000).

Several scientific writings abound in terms of land management in areas other than lowlands (Boutry, 2017; Nana, 2018; Tchekote et al., 2018). Some, on the other hand, have focused on the management of lowland exploitation sites with an emphasis on organizational, equipment, commercial, or local ownership aspects (Gabr, 2018; Fusillier et al., 2020; Legoupil et al., 1999). These studies thus marginalize land, which remains the foundation and substrate of production because it is difficult to separate a resource from its spatial support (Barrière and C. Barrière, 1995).

Moreover, while some authors have focused on land management in lowland sites and irrigation perimeters, they have emphasized access to land, land potentials (Adamczewski et al., 2012; Kaboré, 2013; Saleh and al., 2021; Sanogo, 2019; Tall et al., 2002; Le Roy, 2006), issues of land insecurity and uncertainty related to the precariousness of exploitation methods (Bélières et al., 2013; Illou et al., 2018; Maïga et al., 2021), both in formal development sites and in informal peasant-managed exploitations. Others have focused on the various challenges represented by these lowland areas, especially when they undergo greater valorization through the development of rice or vegetable exploitation sites (Erouta and Castella, 2002; Robin and Lavigne, 2020). However, much of these researches in lowland as concerned, rarely take into account the different changes in agricultural activities, as well as the diversity of production actors and management modes. The main objective of this study is to analyze the different modes of socio-land management of wetland landscapes in the commune of Kyon (Burkina Faso). This would therefore help guide lowland development policies in the study area.

2. MATERIALS, METHODS AND DESCRIPTION OF THE STUDY AREA

The present study was conducted in the rural commune of Kyon, belonging to the administrative province of Sanguie in the Centre-West region of Burkina Faso. The rural commune of Kyon is distinguished by a large exploitation of lowland areas through rainfed and irrigated crops such as rice, maize, sorghum, sesame, sweet potato, etc. These lowland areas in the study area are also interspersed with fertile hydromorphic soils with a high capacity for water retention. It benefits from a wide linear hydrographic network and water bodies that facilitate the exploitation of lowland sites (Figure 1). This facilitates the exploitation of various types of crops.

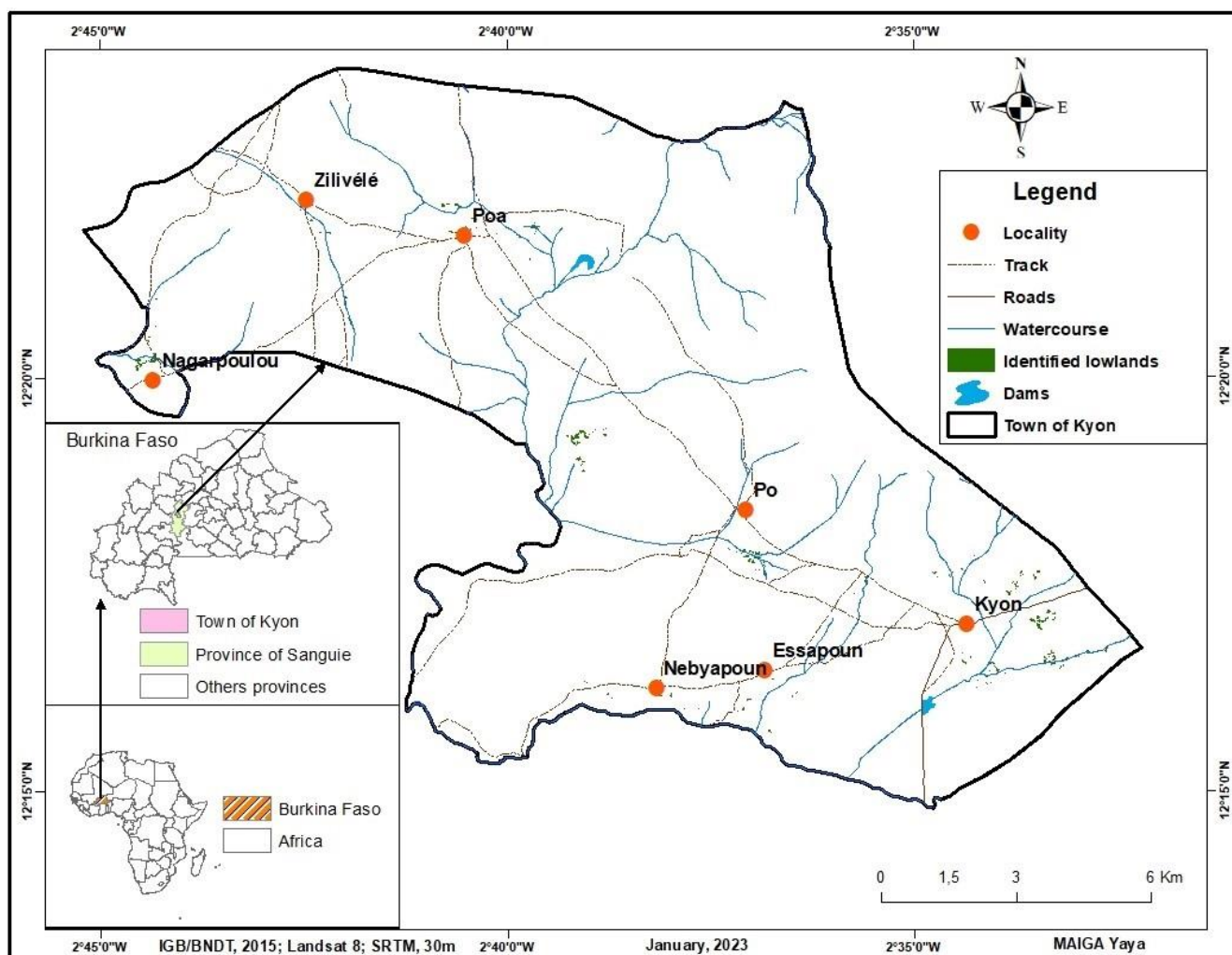


Fig.1. Geographic location of the study area

Data collection was carried out on the lowland sites scattered throughout the various localities of the commune concerned. The data collection technique required the adoption of a mixed approach consisting of qualitative and quantitative research techniques through individual surveys, individual information gathering interviews and discussions with five (05) groups of producers (focus groups). The different themes addressed during the discussions included variables such as the modes of socio-fonciary management, the changes and explanatory factors of this dynamic as well as the types of resistance to certain management rules of the farm sites.

The demographic sampling technique is that of Yamane (1967), taken up by Glenn (1992), which is expressed as follows: $n = N / (1 + N(e)^2)$; where n is the size of the sample to be surveyed, N is the size of the parent population, and e is the level of precision or margin of error, set at 5%. The application of this technique made it possible to interview 378 producers out of a total of 1030 farmers.

The quantitative data collected was processed and analyzed using descriptive statistical methods such as tables and dynamic cross-tabulation graphs. The analysis of the qualitative data was possible thanks to the method of the content of the speeches. The combination of these different methods was of great interest for this study. The combination of these different methods was of great interest for this study. It allowed for the identification, description, and analysis of the different modes of socio-land management of the lowland areas of the investigated municipality.

3. INVENTORY AND CHARACTERIZATION OF THE MODES OF SOCIO-FONCIARY MANAGEMENT OF THE LOWLANDS OF KYON

In the study area, three (03) categories of principles govern the functioning and exploitation of the lowlands included: moral rules (46.90%), those related to land tenure (41.67%) and environmental aspects (3.76%). The application of these principles by the stakeholders is therefore relatively to the village chief, the landowners who represent the clan or lineage chiefs, and the elders or local elders. According to Bayili (1983), in Lyéla or Nuna society in the North, the land chief is the supreme representative of the spirits and ancestors to men. He is responsible for applying the laws of the land and for being the absolute mediator between the land and its occupants. Thus, these different customary or local authorities are in charge of the entire local socio-land management scene, including the lowland areas.

3.1. Moral or social rules

These represent the set of management principles related to the values of Lyéla society or the studied localities. Inseparable from society, the management of lowland exploitation sites thus requires the application of the same texts or values that underlie the village community. These moral principles identified among the exploiters, landowners, and resource persons are mainly composed of cases of theft in all its components such as theft of tools, crops, etc. (44.34%), adultery (36.74%), and conflicts (18.91%) (Figure 2).

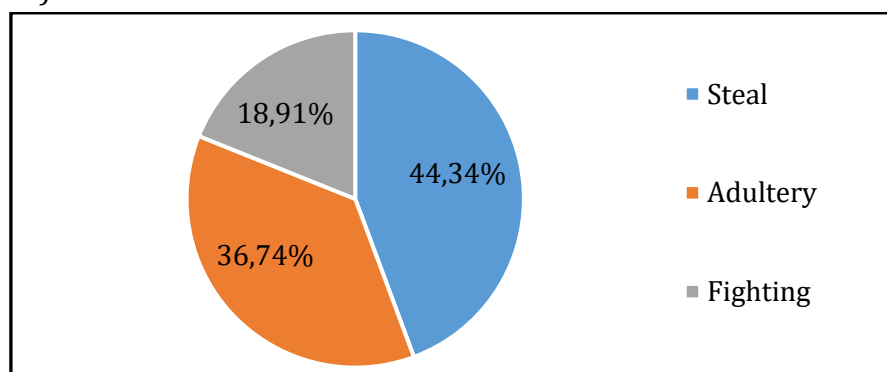


Fig. 2. Management principles inspired by Lyéla's values from the Field survey, 2022.

The establishment of management principles for the lowland farming areas scattered throughout the commune takes into account the types of land use on the different lowland sites. In fact, Table 1 shows that moral rules are more common in family farms (10.40%) and individual farms (6.40%). The head of household and other members of the family (wives and children) are usually involved, and they do not generally require major management rules.

Table 1. Distribution of lowland management rules by farm type (Field survey, 2022)

Types of farms	Principles							
	Land rules No		Moral rules		No knowledge		Total	
	Number	Rate (%)	Number	Rate (%)	Number	Rate (%)	Number	Rate (%)
Family	74	19.73	39	10.40	18	4.80	131	34.93
Group or association	127	33.87	17	4.53	9	2.40	153	40.80
Individual	47	12.53	24	6.40	20	5.33	91	24.27
Total	248	66.13	80	21.33	47	12.53	375	100

Some previous studies report a diversity of moral and social practices that are prohibited on lowland exploitation sites. Saka (1991), for instance, mentions the condemnation of pouring human blood on the plots of the Niofila plain in Burkina Faso, while on the agricultural fields of the Bobo Sya Da (Burkina Faso), the prohibitions mentioned are sexual relations and woodcutting (Sanou, 2004). Inextricably linked to the facts of rural society, the wetlands that are valued by the practice of irrigation also experience the application of the different rules that animate society (IIMI, 1996). In addition to these moral rules, there are also management principles related to the main resource, which is land, as well as environmental principles.

3.2. Land and environmental provisions

Regarding land rules, they are of several types, the most common of which include the prohibition of selling plots (47.69%) and the respect of the established plot boundaries (10.99%) (Figure 3). In addition to these rules, there are regulations such as respecting the cultivation or exploitation period of the plot, the types of authorized crops, and the prohibition of digging or developing a well, renting or transferring the plot to a person without the consent of those in charge of management.

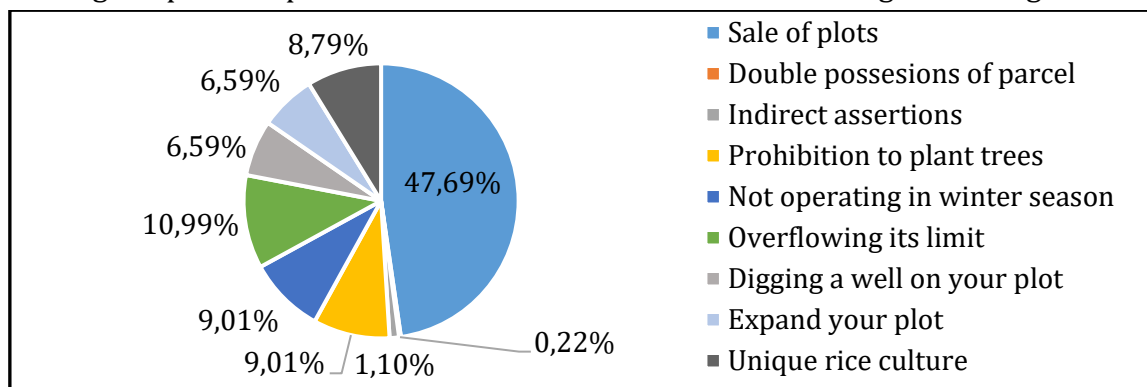


Fig.3. Land management rules for lowland farming areas in Kyon

Source: Field survey, 2022

Ahodo-Ounsou (2020), for his part, also notes new land management strategies developed by locals in the Zè municipality (Benin) in order to improve their position in the management and control of the local land system. Ouédraogo (2006) and Saka (1991), on the other hand, note some land prohibitions, such as the planting of perennial trees, the development of wells, and the imposition of investments by landowners on temporary buyers. In addition to these, there is also a prohibition on selling plots (Lavigne and J. Robin, 2019).

As for the environmental principles of the lowland areas in the investigated municipality, they mainly consist of the prohibition of using pesticides, herbicides, and chemical fertilizers in production (59.46%). These principles of biological production and management are observed only in two sites in the study municipality, namely the cooperative of almond collectors of Talnaacé Yi Jàon de Poa ("collect, put, the strength of God") and the Lougébianaï group of Po, which operates an agroecology site developed by the Systems Approach to the Root Causes of Child Labour Exploitation Project. The crops grown on these sites are moringa, baobab, and vegetable crops (Plate 1).

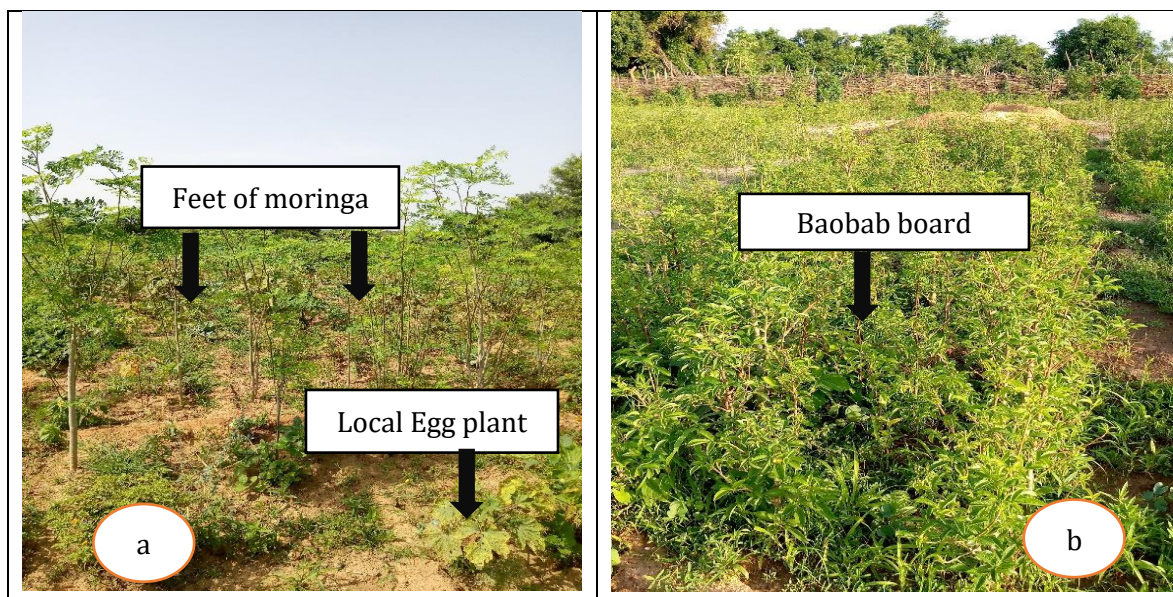


Plate 1: Moringa, market garden crops (a) and baobab (b)

Source: Photo shooting, Maïga Y., June 2022

In addition, boot hygiene through cleaning or removal, according to those interviewed, also falls within the framework of management principles for some exploitation sites, especially vegetable production areas (40.54%). This principle of removing shoes or respecting a certain level of sandal hygiene before accessing the areas helps protect plants against external attacks from microorganisms that boots could carry.

Several factors explain these dynamic situations of lowland management.

4. SOCIO-FOUNDATIONAL MANAGEMENT DYNAMICS IN THE LOWLAND FARM SITES OF KYON

4.1. From moral rules to land and environmental principles: A resurgence of solidarity groups of farmers in the study area

To the moral rules that govern Lyéla society, certain land and environmental provisions have been added in the management of lowland lands in the study area, leading to a local dynamic of management practices. This change in the management of lowland exploitation sites, taking into account new management rules, is mainly explained by the emergence and proliferation of sites of associations or collective land occupation. In addition, environmental management rules regarding the use of pesticides, herbicides, and chemical fertilizers are cultural and production provisions put in place by the NGO in charge of the agroecological project. These are therefore sites operated by groups of solidarity-based farmers.

Within the farms developed with external support such as NGOs, the responsibility for complying with management principles falls on a small group of farmers (mini-bureau) composed of influential individuals, resource persons, and literate people from the local area. However, for other collective land use farms, compliance with management principles falls under the responsibility of the landowner or head of the family. The establishment of these rules for land management allows landowners to safeguard their property or land against any encroacher. It also confers a certain status to these landowners and influential individuals within the local or village community. Hence, other producers such as landless farmers are subject to the desires and methods of land management as schematized and desired by these landowners (Mathieu, s.d).

"...If a woman wants to dig a well here, I don't accept it, so I dig the wells myself for women, so that it doesn't become a problem someday, because she will say that she dug a well..." Excerpt from an interview with B. I., landowner of wetlands in Essapoun, 07/30/2022.

Table 1 shows a 33.37% rate of citation of land management rules among the members of association sites. This is mainly explained by the diversity of actors that make up the associations and that require the establishment of management principles either by the leaders or by the landowner themselves. The lowland sites of Essapoun (18.88%), Kyon (18.35%), and Po (12.50%) that have the highest number of associations recorded the highest rates of application of land management rules (Figure 4).

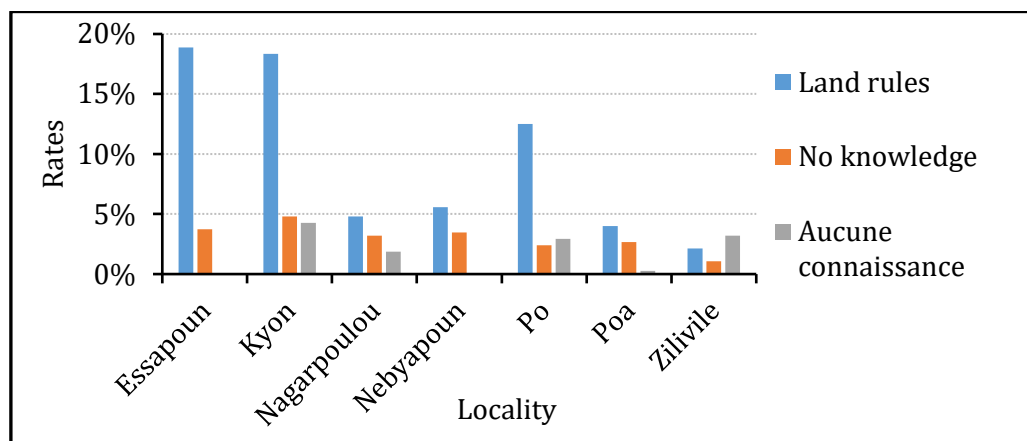


Fig.4. Distribution of management principles by study area

Source: Field survey, 2022

In Sourgou, in the Boulkiemdé region of Burkina Faso, irrigated production is also experiencing a proliferation between ancestral or moral rules and principles of land management (Maïga, 2020). Mollinga (2001) also discusses the aspect of organizational dynamics observed in irrigated areas but from the perspective of water management. Addressing the management of the Dano lowlands in southwestern Burkina Faso, Pale and Da, (2016), indicate traditional water and soil management by the local population.

4.2. Diversity of actors

The lowland activity in the various sites that dot each locality is practiced by several actors. These operators are made up of landowners (67.46%), simple operators or not-landowners (32.01%), and farm managers or leaders of associations (0.53%) (Figure 5). It is also driven by inter-village migrations within the municipality in search of fertile land.

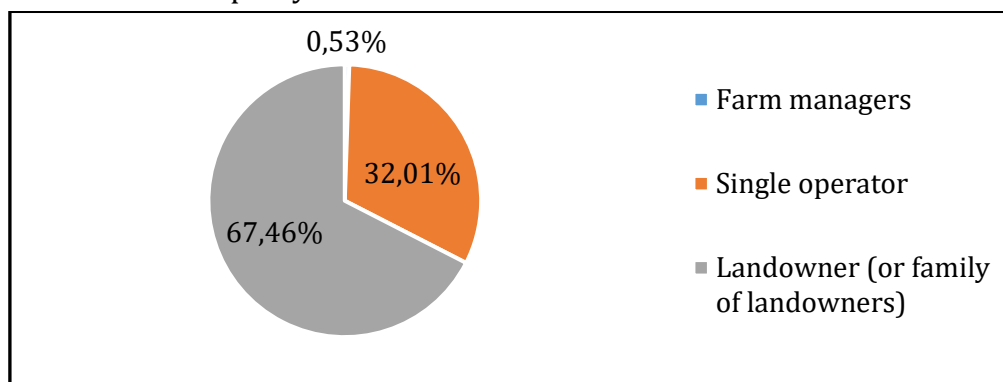


Fig.5. Diversity of lowland farmers in Kyon

The lowland sites are therefore a milieu of recompositing of production actors. Thus, this dynamic in the management of the land with the appearance of new land management rules is consecutive to the recompositing and human diversity of production actors. From access to land or to a parcel of land to exploitation, each stage is strewn with a multitude of management changes. For some authors, the various issues involved in the exploitation of these depressional zones have also conferred on the land a significant economic rent and a mutation of the land management of these submerged lands (Ahmadi and al., 1994; Robin and Lavigne, 2020; Doudoua et al., 2020).

5. CHARACTERIZATION OF THE TYPES OF RESISTANCE TO THE PRINCIPLES OF MANAGEMENT OF THE EXPLOITATION SITES

In the study area, there is a tendency for the various operators to observe the management principles (92.43%). The Lickert scale on the intensity of this observation indicates rates of 66.67% for the strong, 31.58% for the medium and 1.75% for the very strong. According to the respondents, observing the principles of management thus makes it possible to secure one's farming plot, especially since the vast majority of the farmers in the study lowlands are not landowners. This obligation to comply with the recommendations of landowners or certain leaders or influential individuals in the wetlands has also been mentioned in some previous studies (Lavigne, 1992).

In addition to the tendency to respect the principles of management, some respondents (3.51%) noted cases of insubordination to the principles of management, i.e. transgressions of land tenure rules (75.76%) and moral rules (24.24%).

5.1. Transgression of land management rules

Besides water, land is also one of the main resources for production in the lowland farming activity. As a primary and limited resource, it is the subject of many violations regarding management rules. Several cases of transgressions to land management rules were reported by the interviewed individuals, including:

➤ The practice of other types of crops different from those authorized (63.22%). Indeed, less familiar with rice cultivation, lowland farmers opt for a recombination between rice cultivation and other lowland crops such as sweet potatoes, millet, etc., despite their prohibition. According to our field investigations, they are more common in the developed lowlands of Essapoun (78.57%, Table 2) and Kyon-Centre (Plate 2). O. Nebié (1993, p.136) also notes cases of not-compliance with technical exploitation and use lines within the Boulbi perimeter in Burkina Faso.

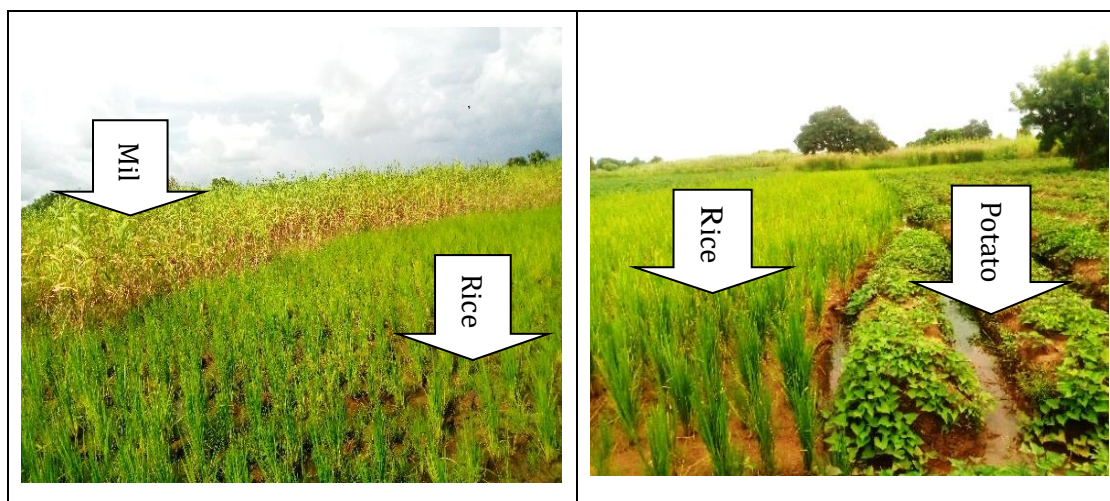


Plate 2. Millet and potato cultivation in the rice-growing lowlands of Essapoun (a) and Goudou (Kyon-Centre) (b)

Source: Photo shoot, Maïga Y., September 2022

➤ Not-compliance with parcel boundaries (13.80%) was also reported by some interviewees, mainly in the lowland sites of Essapoun, as shown in Table 2. This is primarily due to the small size of the exploitation parcels in the study area. This forces farmers to proceed with clandestine enlargements of their plots or by developing beyond the limits of their plots.

Table 2. Distribution of management principle disobedience typologies according to study locations (Field survey, 2022)

Localities	Locations Not-boundary violations		Conflicts		Other crop practices		Total	
	Number	Rate (%)	Number	Rate (%)	Number	Rate (%)	Number	Rate (%)
Essapoun	14	12.50	0	0	88	78.57	102	91.07
Kyon-centre	1	0.89	4	3.57	0	0	5	4.46
Po	1	0.89	4	3.57	0	0	5	4.46
Total	116	14.29	8	7.14	88	78.57	112	100

➤ Cases of transferring the plot to other individuals (13.79%). Despite the prohibitions on temporary loans to a third party without the consent of the landowner or authorities, plot transfers occur among close relatives, such as a mother-in-law to her daughter-in-law. The person initially presents themselves as a support and helper for various agricultural activities on the plot. Thus, the primary beneficiary gradually fades until the temporary transfer of the plot to their helper, often without notifying the plot owner. Temporary loan cases are generally observed in cases of illness or old age. Some transgressions of prohibitions, such as plot loans and permanent exploitation of the plot, have been observed in the Lofing lowland in Dano by Robin and Lavigne (2020).

➤ Plot sales (6.90%) are also a case of infringement of land management principles. Indeed, all production actors know that land for Lyela society's agricultural activity is not for sale. However, to show gratitude to the plot donor, the beneficiary may voluntarily and deliberately give gifts to the donor, such as money, beer, chickens, or cola nuts. Additionally, the beneficiary often gives gifts of cereals, vegetables, etc., to landowners at the end of each agricultural campaign.

➤ Not-compliance with the cultivation or exploitation period of the plot fixed by landowners (2.30%). Very often, landowners are obliged to sow millet or maize in advance of the rainy season in order to signal to temporary applicants to vacate their plots as the winter season approaches.

In addition to the not-compliance with certain land rules in Kyon's lowland areas, the study also shows infringement of customary and moral values of management of these wetland sites.

5.2. Transgressions of moral principles in the management of lowland sites in Kyon

In the lowland exploitation areas of the study commune, field surveys reveal certain cases of conflicts. These conflicts are related to animal trespassing, disputes over parcel boundaries between farmers, and conflicts over the use of wells or water. According to Table 2, they are located in villages such as Kyon-centre (3.57%) and Po (3.57%).

6. CONCLUSION

Management methods are undergoing profound changes in rural areas in general and in lowland areas in particular. These dynamics can be explained essentially by the recomposition of production actors, the frantic race for the submerged plot in a context of land crisis.

In the commune of Kyon, the exploitation of the lowlands has generally favored a management dynamic for these flooded areas. These are materialized by the proliferation of management principles inspired by custom and moral values and the rules of land and environmental management. This is thus a mutation of the socio-fonetary organization of lowland farming areas. Several mechanisms are being explored by the various stakeholders in the event of transgression, including amicable resolution between farmers for minor problems and recourse to landowners or the village chief for serious cases of insubordination.

7. ACKNOWLEDGEMENTS

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9. CONTRIBUTIONS OF THE AUTHORS

Maïga Y. participated in writing the research protocol, collecting data in the field, and analyzing and processing the data.

Yanogo P. I. participated in the validation of the research protocol, the proofreading and validation of the article before submission.

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11. KEY TERMS AND DEFINITIONS

Social management: this represents all of the management principles of the inland valley exploitation zones in relation to the values of the society or the study localities.

Land management: this is the set of management norms and rules related to the land of the inland valley sites developed by the different production actors.

Inland valleys: concern any space that can mobilize surface water for an agricultural activity, particularly that irrigated in this work. These spaces are therefore exploited or valorized by agriculture of the rice type, irrigation, market gardening, arboriculture (orchards), unlike Ramsar sites or hydric conservation sites.