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RESEARCH ARTICLE

SOCIO-TERRITORIAL PERFORMANCE OF THE KANKELEN MARKET GARDENERS' UNION AND THE NERICA UNION IN FARANAH PREFECTURE, REPUBLIC OF GUINEA

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Abstract

This research aims to evaluate the socio-territorial performance of agricultural holdings belonging to the KANKELEN Market Gardeners' Union and the NERICA Union, in order to propose improvement strategies tailored to socio-territorial challenges. The study focused on social components using the IDEA method. The performance assessme nt covered ten market gardening groups and nine rice-farming groups. It also involved 495 members—320 women and 175 men—from these various groups to gain insight into the realities of vulnerability. The evaluation yielded results regarding market gardening and rice farming in the area across three components: human development, production and employment management, and local development. These were assessed using nineteen indicators, with benchmarks based on the maximum possible performance score. The study also considers the extent to which the two Unions are integrated into their respective territories. The evaluation revealed an average score of 63.80% for UGMK and 72.20% for the NERICA Union; the results indicate that members of both agricultural unions demonstrate a commendable level of internal efficiency, reflecting a strong capacity for adaptation. Regarding the socio-territorial performance of these unions, the government and various projects and programs (ISAV, PNAAFA, AgriFbbarm, FAO, UNDP, etc.) have funded specific agricultural projects, including land development, warehouse construction, the provision of equipment and inputs, and financial support.

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Introduction:-

At the international level, the fight against hunger focuses on boosting agricultural production through the use of chemical products. However, this method has detrimental effects not only on human health but also on soil productivity. Indeed, while the intensive use of chemicals boosts agricultural output, it also jeopardizes the food security of many farming households and consumers (FAO, 2015). Furthermore, does this growth in agricultural production—which often appears to disregard agroecological standards—take socio-territorial values into account? Agricultural production growth and agroecology can be compatible, provided that technical solutions are available and their implementation does not run up against a host of sociological, organizational, and economic constraints (Dugué & Beauval, 2014).In this context, evaluating methods that combine agricultural development with the preservation of heritage—including through digital means—could help address climate change issues and safeguard biodiversity (Shaqura &Lasseur, 2023).In Africa, professional agricultural organizations face socio-territorial challenges linked to climate issues. Market gardening and rice farming, for instance, are evolving sectors due to rising food demands (Maseko et al., 2017). Yet, this growth does not always align with the principles of sustainable agriculture—practices that utilize environmental resources rationally while considering the needs of future generations (Velten et al., 2015).

For a business or organization, this concept of "overall performance" is multidimensional, extending well beyond mere financial results; it encompasses the ability to adapt to change and to innovate (Issor, 2025). Today, companies face numerous challenges—such as intense competition, market globalization, and economic volatility—to which their performance is highly sensitive. It is evident that future success will belong only to those companies best able to capitalize on opportunities and mitigate the threats they encounter (Dagbelou, 2025).In the context of a business or an agricultural professional organization, the prevailing view is clear and well-defined: achieving high performance is essential to ensure the organization's survival and long-term viability, as well as to boost its competitive advantage amidst intensifying competition and the marked globalization and internationalization of markets. Thus, for a business, performance can be defined as the level of results achieved relative to the efforts expended and resources consumed; this definition relies heavily on the concepts of effectiveness and efficiency (Renaud & Berland, 2010).Guinea is classified as a low-income, least developed country, a status linked to low investment in the agricultural sector. The issues surrounding agricultural investment stem from several factors...
...factors, notably difficulties in accessing finance, climate-related risks, infrastructure issues, and a lack of professional organization. In response to this underutilization, the Guinean government enacted Law L014 to encourage the structuring of agricultural professional organizations (APOs) in order to stimulate agricultural—and subsequently human—development. These Guinean agricultural organizations face significant challenges that hinder their socio-territorial performance.

In the Faranah prefecture, the KANKELEN and NERICA market gardening group unions play a crucial role in improving agricultural production and adopting sustainable practices. Various programs and NGOs support these groups by providing training, storage facilities, work equipment, and agricultural inputs.However, do the farms owned by these two agricultural unions perform well in socio-territorial terms?Thus, the main objective of this research is to evaluate the socio-territorial performance of the farms belonging to UGMK and U. NERICA, using strategies adapted from the Farm Sustainability Indicators (IDEA) method.

Materials and Methods:-

Materials:-

Study area location:-

This research was conducted in the Faranah Prefecture, located 465 kilometers from the capital, Conakry.
According to the 2016 General Census of Population and Housing (RGPH), the Faranah Prefecture has a population of 299,612, a population density of 23 people per km², and a total area of 13,000 km².
It spans an area between 10° 10' and 11° 02' North latitude and 10° 12' and 10° 50' West longitude, with an average elevation of 340 meters. The prefecture was selected due to its agro-climatic location, which is favorable for market gardening and rice cultivation, thanks to its extensive plains and low-lying areas.

It is bounded:-

- To the north by the Dabola and Kouroussa prefectures;
- To the south by the Guéckédou and Kissidougou prefectures;
- To the east by the Kissidougou and Kouroussa prefectures;
- To the west, it shares borders with the Mamou Prefecture and the Republic of Sierra Leone.

- It comprises ten (10) rural communes and one urban commune.

The Faranah Prefecture serves as a buffer zone between Middle Guinea and Forest Guinea.

Methods Sampling:-

We determined a representative sample size of the farms examined per consortium within the union by applying the normal approximation to the binomial distribution (Dagnelie, 1998) using the following formula:Where N denotes the number of farmers analyzed, and Pi represents the proportion of farms,The squared quantile value is 3.84, corresponding to the 0.95 percentile of U with an anticipated margin of error of 5%.We selected a representative sample of 53 members for the NERICA union and 91 members for the UGMK, resulting in a total of 144 members, as detailed in the table.Socio-territorial performance assessment model The socio-territorial performance assessment model comprises three (3) components and nineteen (19) indicators, which are evaluated according to the method outlined in Table 1. Table 1: Model for evaluating the socio-territorial performance of the UGMK and NERICA union (Cissé, 2025)

Tableau 1 **: Model d'évaluation de la performance socio territoriale de l'union UGMK et NERICA (Cissé,2025)**

Component	Indicator	Assessment method
Human Development (35) days	Contribution to a balanced diet: 34 points	Over 80% marketed: 7 points. 70% to 80% of production marketed: 6 points. 60% to 70% of production marketed: 5 points. 50% to 60% of production marketed: 4 points. 40% to 50% of production marketed: 3 points. 20% to 40% of production marketed: 2 points. 10% to 20% of production marketed: 1 point.
	Training: 5 pts	4 or more days of training per year: 4 points You are trained on data up to October 2023. Three days of training per year: 3 points. Two-day annual training: 2 points One day of annual training: 1 point • No annual training days: 0 points Hosting interns (two weeks per year): 2 points Hosting groups of professionals, students, or researchers: 2 points
	Work environment: 7 pts	Land ownership: 2 points Land lease agreement: 1 point Plot location: 0 points Work-related stress: 0 points No work-related pressure: 2 points Number of weeks per year with an overtime load exceeding 8 hours: 0 points Number of weeks per year with an overtime load of 6 to 8 hours: 1 point Number of weeks per year with an overtime load of 3 to 5 hours: 2 points
	Quality of life (according to the farmer): 4 points	Excellent: 4 points Adequate: 2 points Poor: 0 points
	Occupational Health and Safety: 8 points	Use of full protective gear: 6 points Use of masks: 2 points Wearing long-sleeved shirts: 1 point Wearing trousers: 1 point Wearing closed-toe shoes: 1 point Use of gloves: 1 point Washing up after spraying: 2 points Foliar spraying: -3 points Alcohol consumption: -3 points

		Medication use: -3 points Use of full protective gear: 6 points Use of masks: 2 points
	Geographical and sociocultural isolation (according to the farmer): 3 points	No isolation: 3 points Mild isolation: 1 point Pronounced isolation: 0 points
Production Management (33)	Food quality: 12 pts	Organic farming: 8 points Traceability process: 4 points ISO standard: 4 points Use of untreated household waste for fertilization: 2 points Production in an industrial zone (presence of heavy metals): 1 point • Fewer than three monthly treatments: 2 points More than three monthly interventions: 0 points Waiting period exceeding 10 days: 3 points Less than 10 days: 0 points Sustainable products: -2 points Organic farming: 8 points Traceability process: 4 points
	Management of non-organic waste from production: 8 pts	Poor environmental management: 4 points Poor environmental management (storage in a room): -2 points Storage in a dedicated area: 4 Operations: Recycling/recovery – Score: 4 Implementation of waste sorting and disposal via collective collection. Burning, landfilling, dumping in the environment: -2
	Welcoming clients and visitors: 3 points	Pleasant welcome: 3 points Unwelcoming reception: 1 point Poor reception: 0 points
	Strength of the relationship network between the operator, customer, supplier, and other partners (according to the farmer): 3 points	Forte : 3 points Moyenne : 1 point Faible : 0 point
	Consumer information on product quality: 3 points	Customer support throughout the production process: 3 points Information provided to customers regarding manufacturing methods and stages: 2 points Customers not informed: 0 points Customer satisfaction: 2 points Dissatisfied customers: 0 points
	Value creation through short supply chains: 5 points	Direct sales account for less than 5% of revenue: 0 points Direct sales account for 5% to 20% of revenue: 1 point Direct sales account for 20% to 40% of revenue: 2 points Direct sales account for 40% to 60% of total revenue: 3 points Direct sales account for 60% to 80% of revenue: 4 points

		Direct sales account for more than 80% of total revenue: 5 points.
	Direct and indirect contribution to employment: 7 points	1 point for each full-time employee 1 point for three part-time employees
	Group work: 6 points	Exchange of work resources: 2 points Work bank (assistance of more than 10 days per year): 3 points Work office (collaboration of 5 to 10 days per year): 2 points Work bank (assistance of 1 to 5 days per year): 1 point
	Likely long-term viability (according to the farmer): 3 points	Operation virtually guaranteed for ten years: 3 Probable existence: 2 Existence desired if feasible: 1 Probability of disappearance within the next ten years: 0
Jobs and Local Development (32)	Acceptability of the site to neighbors and other users (according to the farmer): 3 points	Acceptance by your social circle: 3 points Limited acceptance: 1 point Exclusion by the community: 0 points
	Social involvement: 7 pts	Active participation in voluntary or professional organizations: 2 points per entity. Holding a position of responsibility within an organization: 1 point Residence on the farm site or in the immediate vicinity: 1 point
	Participation in the development of policies and standards specific to the sector: 3 points	Yes: 2 pts Sometimes: 1 pt No: 0 pts

Results and Discussion:-

A summary representation of the socio-territorial performance of the groups within the KANKELEN Market Gardeners' Union is presented in Figure 1, based on the four components.

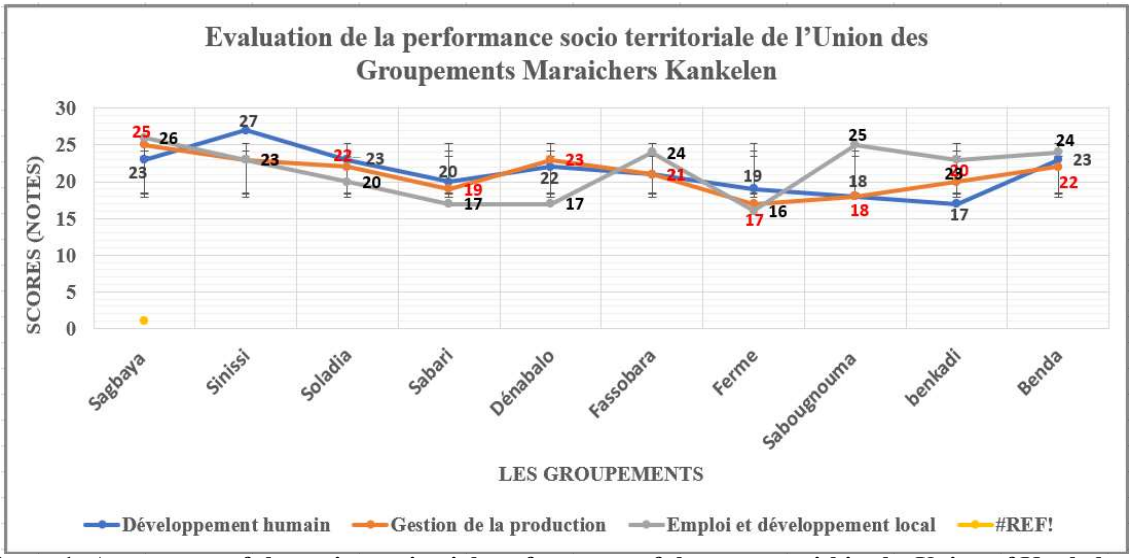


Figure 1: Assessment of the socio-territorial performance of the groups within the Union of Kankelen Market Gardeners' Groups.

This figure shows that:-

• For the human development component, the BENKADI and SABOUGNOUMA groups are limited due to the training indicator, which indicates that the members of these groups have limited capacity for market gardening activities;

• In terms of production management, the FERME and SABOUGNOUMA groups show weaknesses due to the food quality criterion, as organic techniques are rarely used in the production process.

• Regarding employment and local development, the FERME, DENABALO, and SABARY groups are limited due to the short supply chain assessment indicator.

Evaluation of the overall socio-territorial performance of the UGMK:-

The score for each component of the overall socio-territorial performance of the UGMK is shown in Figure 2.

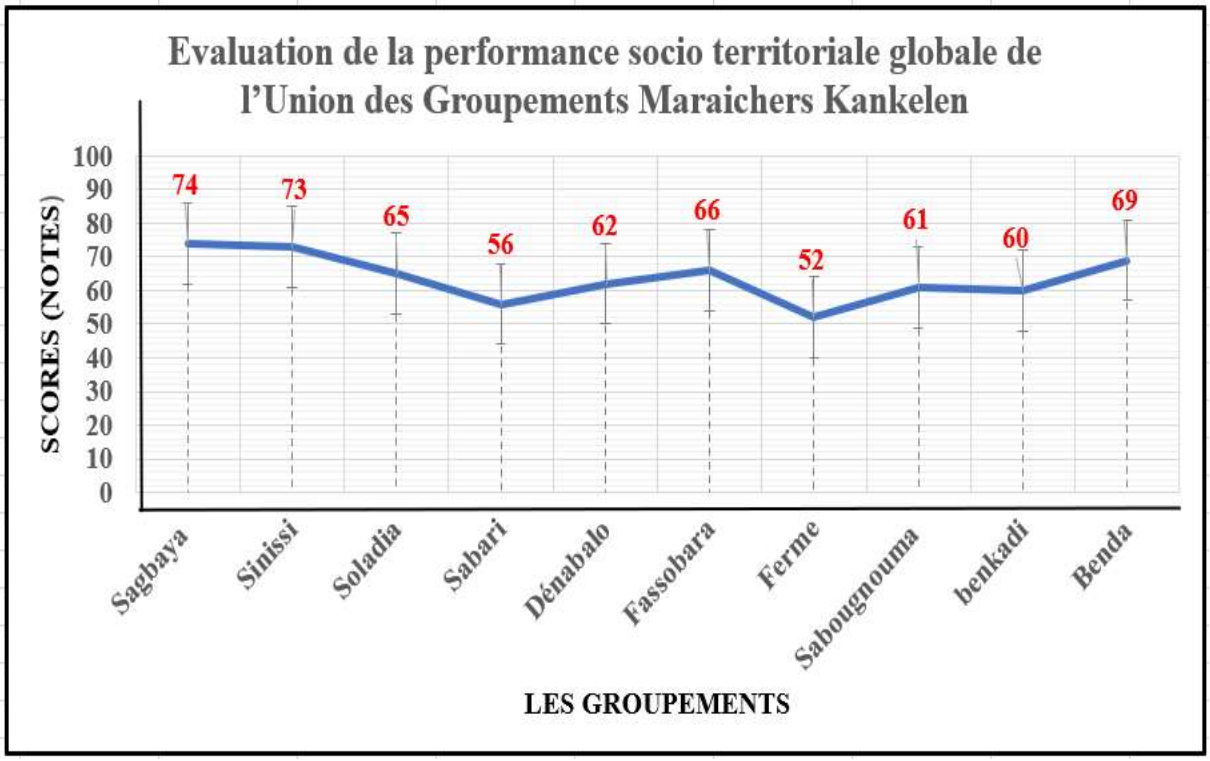


Figure 2: Assessment of the overall socio-territorial performance of the Kankelen Market Gardeners' Groups Union

This figure shows that, despite weaknesses in certain indicators—notably training, produce quality, and value creation through short supply chains—observed among a few groups, the KANKELEN Union of Market Gardening Groups demonstrates a strong level of socio-territorial performance.The SAGBAYA group records the highest score at 74%, followed by the SINISSI group (73%), which involves a large number of students active within the developed SAGBAYA site. Conversely, the lowest score is assigned to the "Ferme" group at 52%; this result is primarily due to a weak performance in the employment and local development component, which averages 48%.However, the hierarchical classification derived from these results remains limited. Details of this classification are presented in Table 2.

Table 2: Proximity matrix between UGMK groups

	Sagbaya	Sinissi	Soladia	Sabari	Dénabalo	Fassobara	Ferme	Sabougnouma	Benkadi	Benda
Sagbaya	0	3,606	4,123	6,000	6,782	3,464	8,944	5,568	4,243	2,828
Sinissi	3,606	0	4,243	5,745	6,083	4,796	8,426	6,633	5,745	4,796
Soladia	4,123	4,243	0	4,359	4,796	3,873	7,000	5,099	4,123	4,796
Sabari	6,000	5,745	4,359	0	5,099	4,472	5,099	4,123	4,000	5,831
Dénabalo	6,782	6,083	4,796	5,099	0	5,831	6,325	6,856	6,325	6,928
Fassobara	3,464	4,796	3,873	4,472	5,831	0	6,633	3,606	2,828	3,742
Ferme	8,944	8,426	7,000	5,099	6,325	6,633	0	5,916	6,325	8,367
Sabougnouma	5,568	6,633	5,099	4,123	6,856	3,606	5,916	0	3,000	5,196
benkadi	4,243	5,745	4,123	4,000	6,325	2,828	6,325	3,000	0	3,742
Benda	2,828	4,796	4,796	5,831	6,928	3,742	8,367	5,196	3,742	0

An analysis of this table reveals that the BENDA and SAGBAYA groups exhibit the greatest proximity in terms of socio-territorial performance, with a Euclidean distance of 2.8. This closeness reflects similarities in their organizational practices, community dynamism, and capacity to mobilize local resources. These groups appear to share common characteristics, notably a higher level of collective engagement and more structured management of their activities.Conversely, the SAGBAYA and FERME groups show the widest gap, with a Euclidean distance of 9. This disparity highlights significant differences in their socio-territorial performance. The FERME group is distinguished by a limited contribution to employment and local development, whereas SAGBAYA stands out for its strong community engagement and the active participation of its members, particularly students.The other groups show intermediate distances, reflecting socio-territorial performance levels that fall somewhere between these two extremes. Thus, the hierarchical classification (see Figure 3) highlights two main trends: on the one hand, groups characterized by strong social cohesion and effective organization, and on the other, those struggling to strengthen their socio-territorial roots and sustainably mobilize their human resources.

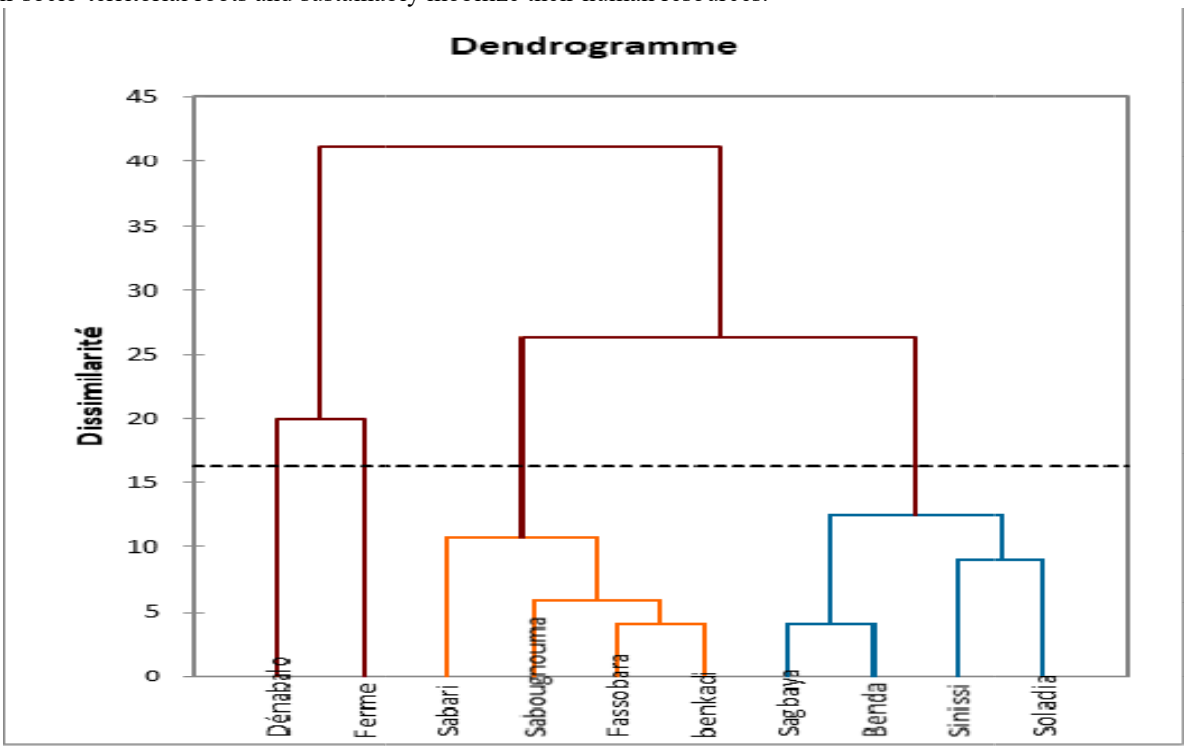


Figure 3: Hierarchical classification of UGMK groups

This figure shows that the UGMK groups fall into four homogeneous clusters: the first consists of the DENABALO group; the second comprises the Ferme group; the third includes the SABARI, SABOUGNOUMA, FASSOBARA, and BENKADI groups; and the fourth is made up of the SAGBAYA, BENDA, SINISSI, and SOLADIA groups.
Assessment of the socio-territorial performance of the NERICA Union Figure 4 presents a summary of the socio-territorial performance of the NERICA Union groups based on the four components.

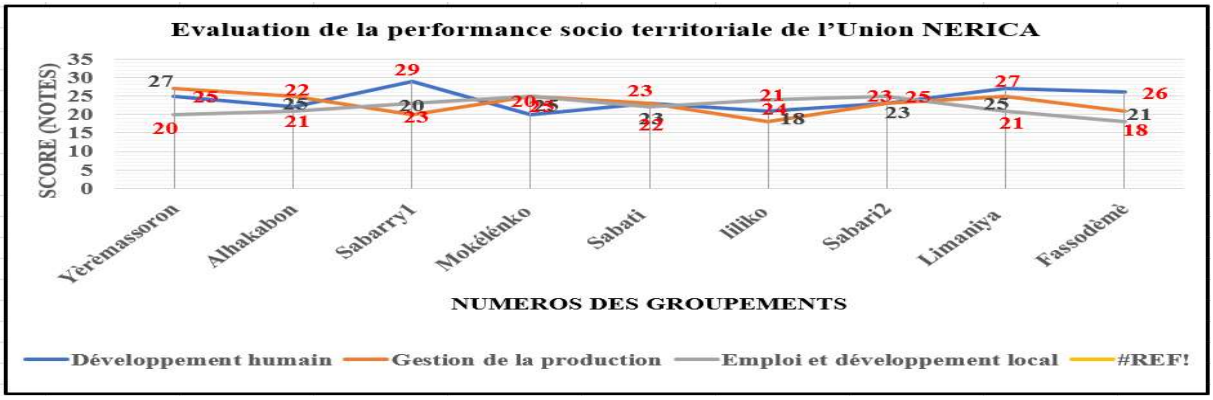


Figure 4: Assessment of the socio-territorial performance of the Union NERICA groups

Analysis of this figure reveals the following:-

- Human development: All nine groups within the Union NERICA demonstrate strengths, indicating good performance in this area.
- Production management: The groups also show notable performance. However, certain limitations emerge, particularly regarding the indicator for the strength of the relational network among producers, customers, suppliers, and other partners. This weakness is also linked to the food quality indicator, as organic production techniques remain under-integrated into the production process.
- Employment and local development: The highest scores are recorded by the MOKELENKO and SABARY 2 groups, while the lowest level is observed in the FASSODEME group.

Assessment of the overall socio-territorial performance of Union NERICA
The score for each component of Union NERICA's overall socio-territorial performance is presented in Figure 5.

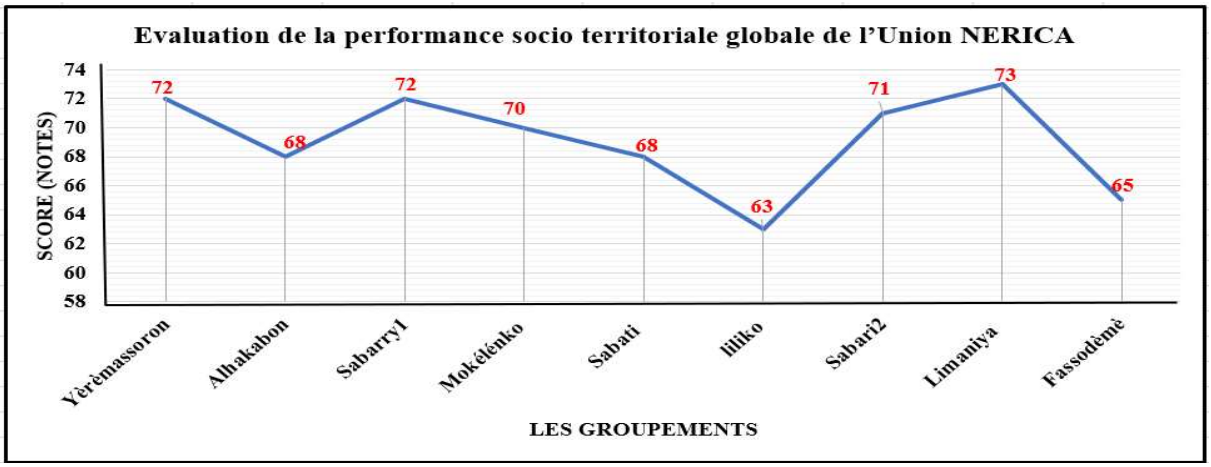


Figure 5: Assessment of the overall socio-territorial performance of the NERICA Union

This figure shows that the overall scores achieved by the NERICA Union range from 63% to 73%, indicating that the socio-territorial performance targets for the groups as a whole have generally been met. The highest score was recorded by the LIMANIYA group (73%), followed by the YEREMASSORON and SABARY1 groups (72%). Conversely, the lowest score was observed for the LILIKO (Wakila) group (63%). It should be noted that the

hierarchical classification derived from these results is limited in scope. Details of this classification are presented in Table 10.

Table 3: Proximity matrix (Euclidean distance) between NERICA Union groups

	Yèrèmassoron	Alhakabon	Sabarry1	Mokélénko	Sabati	Wakila	Sabari2	Limaniya	Fassodèmè
Yèrèmassoron	0	4,243	4,359	4,472	5,196	5,477	4,243	3,464	2,236
Alhakabon	4,243	0	4,583	3,162	3,873	4,690	3,162	4,690	4,123
Sabarry1	4,359	4,583	0	5,568	4,690	5,196	5,196	2,646	4,000
Mokélénko	4,472	3,162	5,568	0	4,359	5,657	3,464	5,657	5,385
Sabati	5,196	3,873	4,690	4,359	0	3,317	3,606	4,359	5,099
Wakila	5,477	4,690	5,196	5,657	3,317	0	4,899	4,000	5,000
Sabari2	4,243	3,162	5,196	3,464	3,606	4,899	0	4,690	4,796
Limaniya	3,464	4,690	2,646	5,657	4,359	4,000	4,690	0	3,000
Fassodèmè	2,236	4,123	4,000	5,385	5,099	5,000	4,796	3,000	0

An analysis of this table reveals that the FASSODEME and YEREMASSORON groups are the closest in terms of socio-territorial performance, with a Euclidean distance of 2.2. This proximity suggests that these two groups share common characteristics, such as similar internal organization, consistent agricultural practices, and comparable interaction with local stakeholders (customers, suppliers, and partners).In contrast, the LIMANIYA and MOKELENKO groups are the furthest apart, with a Euclidean distance of 5.7, reflecting significant differences in their socio-territorial performance. This gap may stem from disparities in group structure, participation in collective activities, members' training levels, or the ability to add value to production locally.The other groups show intermediate distances, indicating socio-territorial performance levels that fall somewhere between these two extremes. Overall, this analysis highlights performance clusters, making it possible to identify leading groups as well as those requiring targeted support to strengthen their social cohesion, organization, and local integration.

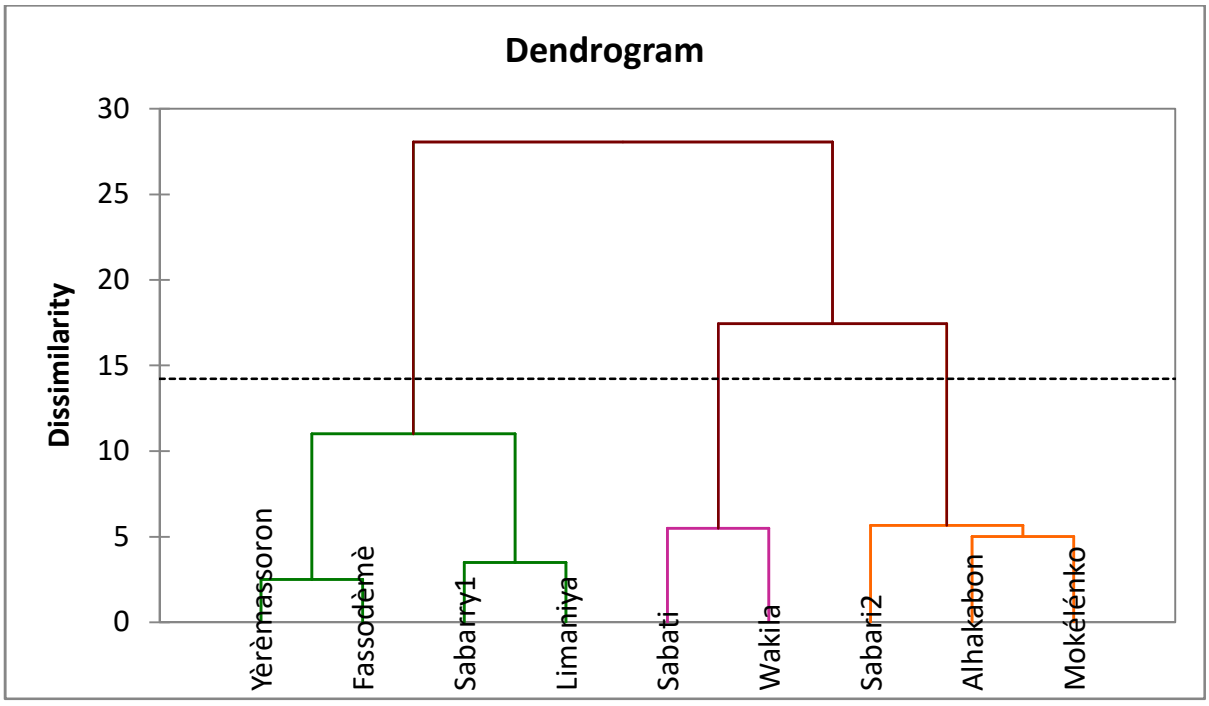
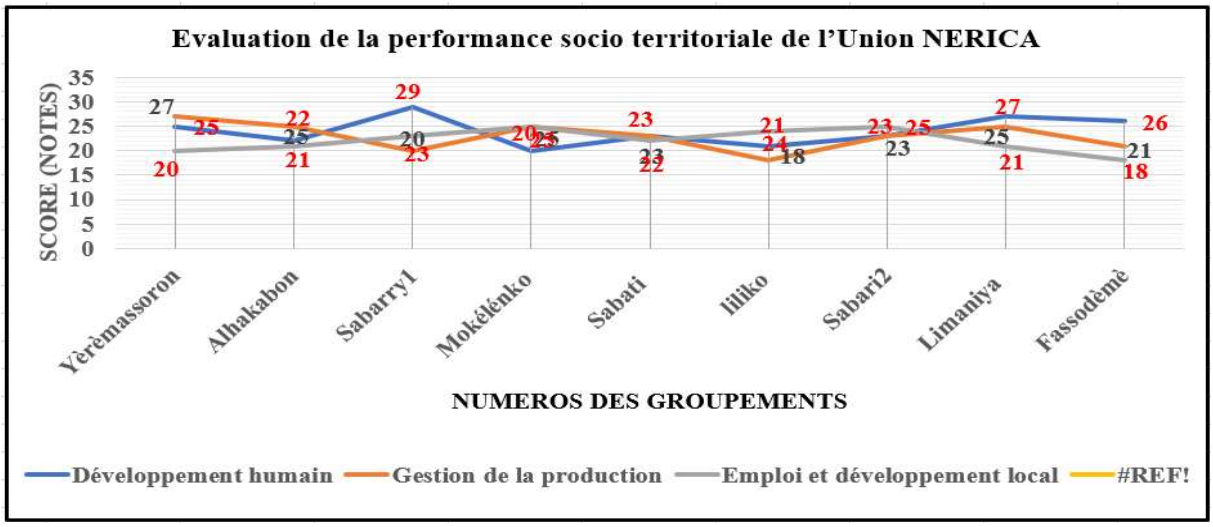


Figure 6: Hierarchical classification of NERICA groups



This figure shows that the NERICA Union groups fall into four homogeneous clusters:-
1.First cluster: YEREMASSORON and FASSODEME
2.Second cluster: SABARRY1 and LIMANIYA
3.Third cluster: SABATI and WAKILA
4.Fourth cluster: SABARRY2, ALHAKABON, and MOKELENKO

This classification highlights internal similarities within each cluster regarding socio-territorial performance, organizational practices, and collective dynamics.

Discussion:-

The socio-territorial performance results for market gardening activities show a score of 63.80% for the Kankélén market gardening group union and 72.20% for the NERICA union; these figures are close to the 58.28% average found by Ahouangninou. This sustainability pillar comprises three components—human development, production management, and employment/local development—yielding the following results:

Human development:-
The top-performing groups enjoy better access to training, nutrition, and adequate working conditions, confirming the central role of human capital in resilience and socio-territorial performance (Pretty, 2003). Geographically isolated groups show lower scores, reflecting limited access to resources. Consequently, the agricultural unions achieved the following scores:
UGMK: average score of 21.30/34; performance level of 62.64%.
U. NERICA: average score of 25/34; performance level of 73.50%.
These results corroborate those of Ahouangninou (2013), who reported an average score of 21.44/33 and a performance level of 64.96%.

Production management:-
While product quality and waste management are relatively well handled, weak networks and limited consumer information constrain integration into local supply chains; this aligns with the observations of Barrett et al. (2010) regarding the importance of value chains for farm competitiveness.

The results achieved by these unions are as follows:-
UGMK: average score of 21/33, performance level of 63.63%.
U. NERICA: average score of 24/33, performance level of 72.72%.
These results exceed those reported by Ahouangninou (2013), which showed an average score of 18.91/33 and a performance level of 57.30%.

Employment and local development:-
Social engagement and value creation through short supply chains are strengths, yet low participation in supply chain standards and concerns regarding long-term viability highlight institutional vulnerabilities. These results

confirm the importance of active participation in local dynamics to ensure the sustainability of initiatives (Ostrom, 1990; FAO, 2017).

The scores obtained by each union are as follows:-
UGMK: average score of 21.50/33, performance level of 65.15%.
U. NERICA: average score of 23.20/33, performance level of 70.30%.
These results exceed those reported by Ahouangninou (2013), which showed an average score of 17.93/33 and a performance level of 54.33%.Our study reveals that small and medium-sized farms exhibit comparable levels of socio-territorial sustainability, at a rate of 53%. Ahouangninou (2013) observed a similar trend in Benin.Finally, the overall performance regarding this socio-territorial sustainability shows scores of 63.80% for UGMK and 72.20% for U.NERICA—values close to those reported by Ahouangninou (58.28%). The low scores observed for the "direct or indirect contribution to employment" indicator are attributable to the prevalence of individual plots, which prioritize individual yields over communal labor.The socio-territorial performance of the groups is moderate yet varied, with overall scores ranging from 52 to 74 out of 100. The disparities between groups highlight the importance of human capital, production organization, and territorial integration in strengthening local resilience.

Conclusion:-

The challenges regarding the socio-territorial performance of the UGMK and NERICA agricultural unions in Faranah Prefecture were analyzed to identify levers for improvement. In-depth analysis highlights the need for corrective measures to optimize the operations of these unions. With this in mind—and to conduct a more nuanced assessment of socio-territorial performance focused on market gardening and rice farming—we applied the IDEA method. This socio-territorial assessment is based on three components: human development, production management and employment, and local development. The results reveal certain weaknesses: for UGMK, a lack of training limits the quality of market garden produce, while for NERICA, limited relationships among growers, customers, and suppliers, combined with low adoption of organic methods, reduce food quality. Both unions also make only a limited contribution to direct and indirect employment.

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