

# Socio-Anthropological Representations of the Introduction of Productive Sanitation among the Gouro, Yowlè, Baoulé and Mossi Peoples of the Bouaflé Department in Côte d'Ivoire

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## Abstract

Productive or ecological sanitation (ECOSAN) is the use of solid and liquid waste as a valuable resource, particularly in agriculture. Hygienized human urine and faeces have been used as biofertilizers to increase agricultural productivity by sustainably sanitizing the living environment of rural communities. This study was carried out in four rural communities of Bouaflé to understand their social representations and practices of productive sanitation. Urine-diverting dry toilets (UDDT), acquired by beneficiaries identified through voluntary registration, were introduced into the communities as tools for collecting excreta, which would be transformed into biofertilizer after hygienization. This qualitative and quantitative study enabled us to better address the issue of innovation within communities. The results showed that representations vary from one community to another, and are influenced by their beliefs and cultural values. However, all communities agree that the use of TSDU is restrictive, and that the use of hygienized human urine and faeces in agriculture is repugnant. On the other hand, 80% of people are motivated by the idea of free organic fertilizer. This study led us to use the sociological and psychosocial approach to master the local dynamics of the ecological sanitation approach in rural areas.

## Keywords

Faeces, Hygienized, Social Representations, TSDU, Urine, Use

## 1. Introduction

Human urine and faeces are subject to a number of sometimes pejorative claims. But in the context of productive sanitation, these materials are used as fertilizers in agriculture after hygienization. Productive sanitation was revealed at the Bellagio conference in 2000 as a way of overcoming the socio-economic, health and environmental limitations of conventional sanitation (SANDEC, 2000). Also known as Ecological Sanitation (ECOSAN), productive sanitation is a sanitation approach based on the use of hygienized human excreta in agriculture to increase agricultural production and sustainably improve the living environment (Esrey et al., 2001).

In Côte d'Ivoire, productive sanitation was introduced by the agency Eau et Assainissement pour l'Afrique (EAA) to compensate for the failure of many conventional sanitation programs, especially in rural areas. Several writers and researchers, such as Gnagne et al. (2007), Dagerskog (2006), N'da et al. (2007), and N'goran et al. (2010), have extensively discussed the agronomic, technical, sanitary and sociological aspects of the ECOSAN approach, to demonstrate its advantages and disadvantages. But we're particularly interested in the social representations that the rural populations of Bouaflé have of the use of TSDU and the use of hygienized human excreta in agriculture. For the socio-anthropologist, social representations are a compass that guides understanding and knowledge of a people's attitudes to a given phenomenon. They play an important role in the institution of a consensual reality, as Moscovici emphasizes in several of his works (1961, 1984, 2013, 2014). He also demonstrates the socio-cognitive function in the integration of novelty, the orientation of communications and behaviors. It is therefore important to study the social representations of a people with whom development projects are envisaged in order to master the cultural background of the people, i.e. their ideologies and social environment, so as to better orient new thinking. Jodelet (1984) defines social representations as "a modality of practical thought oriented towards communication, understanding and mastery of the social, material and ideal environment".

Addressing the question of social representations of TSDU and the use of hygienized human urine and faeces as fertilizer in a multi-ethnic community will enable us to shed light on and understand different perceptions of the concept of productive sanitation in the same territory. We are therefore interested in the Bouaflé department, which brings together three major ethnic groups in its geographical area: the Gouros, the Yowlès, the Baoulés and their host, the Mossis. So, can multi-sectoral action through productive sanitation correspond to the socio-cultural contexts of these populations? What's more, can the social representations people have of themselves really enable them to adopt productive sanitation? The aim of this study is therefore to analyze and understand the social representations of populations faced with the use of hygienized human urine and faeces in agriculture in the same cultural environment, in order to better understand the different existing social representations. The thesis is as follows: social represen-

tations of TSDU and the use of urine and feces determine the level of adoption of productive sanitation, while the idea of acquiring free organic fertilizer remains a source of motivation.

## 2. Methodological Characteristics and Data Collection

### 2.1. Study Area

Bouaflé department is located in west-central Côte d'Ivoire and covers an area of 3980 km<sup>2</sup>, with an estimated population of 300,305 in 2021 (RGPH, 2021). It is bordered by the departments of Zuénoula to the north, Sinfra to the south, Daloa to the east and Yamoussoukro to the west. A transition zone, Bouaflé department is divided between dense forest to the south and west, and wooded savannah to the north and east. Agriculture is highly developed and is the main activity, making the department the second largest cocoa-producing region in Côte d'Ivoire (Commodoafica, 2013). The study took place in four ethnic communities and fourteen villages in this department as shown in Figure 1.

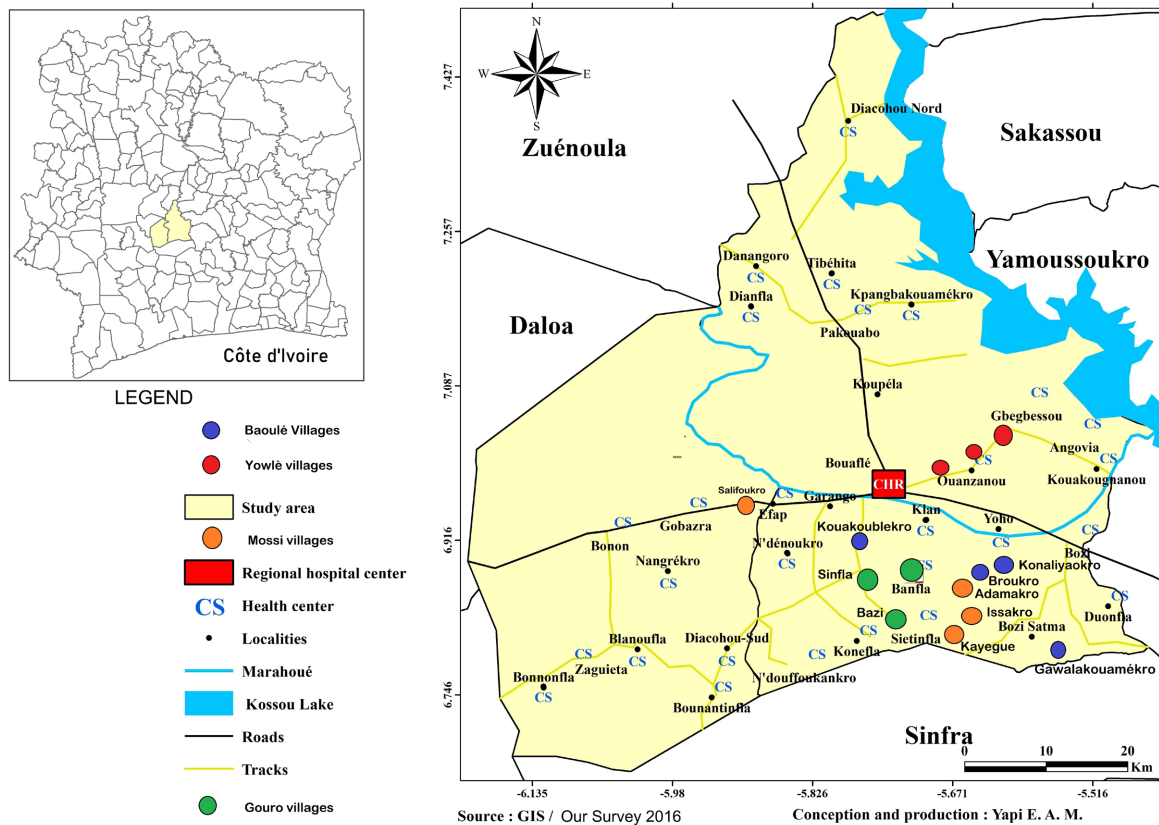


Figure 1. Map of study sites.

### 2.2. Type and Duration of Study

This longitudinal study, which ran from January 2014 to December 2016, is both qualitative and quantitative.

The qualitative approach enabled us to better observe and understand the social

representations of the new phenomenon of productive sanitation. It enabled us to describe the construction and use of TSDUs, as well as the process of hygienizing excreta and using them in agriculture.

The quantitative approach, meanwhile, enabled us to carry out the study on a sample of the population to whom a questionnaire comprising both closed and open-ended questions was administered.

This dual socio-anthropological approach is better suited to tackling the problem of innovation. It is based on ethnology, the anthropology of social change or the sociology of rural development, which recommend taking into consideration all the social partners directly or indirectly involved in this project to promote productive sanitation.

### 2.3. Study Population

The population of this study is made up of households that have or have not received ECOSAN toilets and urine containers. All households present in the village for at least 6 months prior to the start of the project were included in the study. Households that refused to participate in the survey were not included in the study. The resources we used were the heads of households, who are the supreme authority. They may or may not take their household to use the TSDU. They are also the heads of the cultivable plots to be fertilized. He is therefore in a better position to take an interest in the socio-economic benefits of TSDU or not.

### 2.4. Sampling

#### 2.4.1. Quantitative Approach

For this study, the minimum sample size to be used, increased by 10%, was determined by the following mathematical formula:

$$n = N / (1 + N \times e^2)$$

with  $N$  = population size estimated at 859 and  $e$  = precision level estimated at 5%.

$n$  = minimum sample size;  $N$  = total number of households for the four ethnic groups.  $n = 859 / (1 + 859 \times 0.05 \times 0.05) = 300$  households.

The minimum sample size is therefore 300 households.

A three-stage survey with third-stage stratification was used to determine this minimum sample.

At the first level, the sampling frame for the primary sampling units (PSUs) was the list of the main rural and ethnic communities involved in the project to use TSDU and hygienized human urine and feces (UFHH) as fertilizer.

As a result, four (04) main ethnic communities in the Bouaflé department—Baoulé, Gouro, Mossi and Yowlè—made up the PSUs.

Then, at the second level, the sampling frame for the secondary sampling units (SSUs) was the list of villages in the 04 ethnic communities that had taken part in the TSDU and UFHH fertilizer project. A total of 14 villages constituting the ESUs were defined in each PSU.

Finally, at the third level, the sampling frame for the tertiary sampling units

(TSDU) was the list of households in the 14 villages from the 04 ethnic communities that had participated in the TSDU and UFHH fertilizer project.

The households to be surveyed per village for each community were distributed according to the rule of proportionality over the minimum sample of 300 households expected for the study. Taking into account the static provision to survey at least 50% of households, a higher sample of households distributed in **Table 1** was surveyed per community in each village than the minimum expected sample.

**Table 1.** Number of villages and households surveyed per community.

Ethnic Communities (UPE)	Villages (USE)	Households (UTE)	Households with TSDU	Surveyed with TSDU	Households without TSDU	Surveyed without TSDU	Total Households surveyed
Baoulé	Broukro	66	26	13	40	20	33
	Konaliyaokro	41	11	11	30	15	26
	Kouakoublékro	42	31	16	11	07	23
	Gawalakouamékro	24	8	4	16	8	12
	<b>Total Baoulé</b>	<b>173 (20%)</b>	<b>109</b>	<b>44</b>	<b>97</b>	<b>50</b>	<b>94</b>
Yowlè	Dialè	48	03	03	45	23	26
	Simmimbo	31	19	10	12	06	16
	Koubi	54	08	04	48	23	27
	<b>Total Yowlè</b>	<b>133 (16%)</b>	<b>30</b>	<b>17</b>	<b>103</b>	<b>52</b>	<b>69</b>
Mossi	Adamakro	44	14	07	30	15	22
	Issakro	76	11	06	65	33	39
	Kayégué	38	14	07	24	12	19
	Salifoukro	28	25	13	03	03	16
	<b>Total Mossi</b>	<b>186 (22%)</b>	<b>64</b>	<b>33</b>	<b>122</b>	<b>63</b>	<b>96</b>
Gouro	Bazi	60	07	04	53	27	31
	Blanfla	176	100	50	175	88	138
	Sinfla	32	19	10	13	07	17
	Total Gouro	267 (42%)	126	64	241	122	176
<b>Total Community</b>	<b>859 (100%)</b>	<b>186</b>	<b>158</b>	<b>563</b>	<b>287</b>	<b>445</b>	

Source: 2016 survey data.

#### 2.4.2. Qualitative Approach

Our qualitative approach is based on direct observation of the ECOSAN project implementation process. Consequently, we were interested in the construction and adoption of TSDUs, the village's health development, the excreta collection and transport system, representations of UFHH, the use of biofertilizers, difficulties linked to fertilization techniques and methods, and the consumption of products fertilized with excreta.

The sample size for this qualitative survey is determined by the saturation threshold for observing the phenomenon in each village.

## 2.5. Data Collections Techniques

The techniques used to gather the data needed to understand and explain the phenomenon under study were direct observation and questionnaires.

### 2.5.1. Direct Observation

Observation enabled us to note the attitudes and behaviours of the population during the construction and use of the TSDUs and with regard to the use of hygienized human excreta in agriculture. Similarly, the sanitation situation in communities, the production of urine and faeces in TSDUs, their hygienization and application to plants, and the consumption of products fertilized with excreta were observed (Yapi et al., 2018). It also enabled a qualitative assessment of the facts in the field and a sociological identification of the population's attitudes.

### 2.5.2. Questionnaire

According to N'Da (2006), the questionnaire consists in asking subjects a series of questions relating to a situation, their opinion, their expectations, their level of knowledge of a problem or any other point of interest to the researcher. It is thus a methodological procedure for gathering data for our survey. Designed with the study's objectives in mind, the questionnaire must reflect the research objective in question, and elicit sincere responses from respondents that can be analyzed in relation to the purpose of the survey. Our questionnaire has been designed in line with our research objectives and hypotheses. It is a combination of closed and open-ended questions. The questionnaire was structured around the acquisition of TSDU and the use of excreta by the household.

## 2.6. Qualitative and Quantitative Data Analysis

For quantitative data, we used Excel and IBM SPSS 22.0. The latter, a software package for quantitative and qualitative analysis, was used to produce tables and diagrams. The first step was to analyze the phenomena observed. With this analysis, the aim was to extract essentially descriptive statistics. These results highlighted frequencies or proportions relating to variables and their various indicators. Qualitative data analysis involved grouping information together in order to adopt a critical stance on the information collected, and then to relate the practices we observed. The qualitative method helped us to clarify the complex and poorly known or misunderstood aspects of our research. In addition, it helped us to make sense of some of the numerical information obtained through the questionnaire.

## 2.7. Ethical Considerations and Study Difficulties

This study was approved by the departmental and customary authorities. The anonymity of the respondents and the confidentiality of their answers were respected.

However, any research cannot be carried out without difficulties. Indeed,

knowledge of urine-diverting dry toilets, their uses, the mechanism for managing human excreta, the value of fertilization in agriculture and the consumption of by-products are all challenges to be met in a community too steeped in taboos and prejudices or too attached to their customs and habits. Language was a barrier, and we had to hire interpreters to guide us at times during our surveys.

### 3. Presentation and Analysis of Results

#### 3.1. Typology of the Urine-Diverting Dry Toilet (UDDT)

Observation in the field has shown that the TSDU construction technique is specifically based on the idea of separating urine and faeces to ensure the best excreta treatment. TSDUs built in households have the following characteristics: 1m wide; 1.30 m long and 2.30 m high (**Figure 2**). A parallelepiped-shaped pit with a volume of 0.21 m<sup>3</sup> is built inside, and a covering slab is laid on top. The slab consists of a wooden support and cement dosed at 0.03 kg/cm<sup>3</sup> over a thickness of 20 cm on either side of the pit. A polyethylene bowl is placed on top of the support. The faeces land in a 60-litre drum placed in the pit at the level of the defecation hole. Urine canisters (Bidurs), 20 or 25 liters in size, placed in the pit at the level of the urinary conduit of the bowl located on the support, enable urine to be collected.



**Figure 2.** Photographic illustrations of excreta collection equipment: a) stand and bowl in Salifoukro, b) interior of pit in Simmimbo, c) completed latrine in Blanfla and d) completed latrine in Kouakoublékro.

#### 3.2. Technical Constraints and Sociological Perceptions of TSDU

Our findings from the field show that the TSDU is little-known in the communi-

ties. Indeed, 100% of our respondents had no knowledge of urine-diverting dry toilets prior to the sanitation project in these localities. As a result, the introduction of the UDDT in the various communities gave rise to a number of apprehensions. It's a question of how people made sense of this innovation, based on the representation of pre-existing defecation practices.

The TSDU is an unusual latrine in the rural communities of Bouaflé. In fact, its unusual features offend social sensibilities. More than half of the people interviewed in our study area noted constraints to the use and adoption of the TSDU. Successful adoption of this new latrine will depend on understanding and mastering the use process, and on meeting the population's expectations (Bartels & Reinders, 2011).

### 3.2.1. Among Gouro Respondents

Among the Gouro in particular, communities do not find it difficult to use the TSDU. A higher percentage, 47.8%, feel no social constraint to the use of TSDU. Nevertheless, 22.6% mention the problem of size. They find the latrine too small and feel trapped inside.

The use of excreta is embarrassing for 17.20% of this community, who are too attached to defecating in the open air; defecating and using waste arouses repugnance for 11.8% of our Gouro respondents, and mockery from others, for only 0.5% of respondents. It can be seen here that the proportion of our respondents who socially accept TSDU is higher. This can be explained by the fact that the Gouro find defecation normal and do not find the management of excreta a major source of discomfort. Despite the fact that they feel comfortable in the open air, those who are interested in the use of excreta in agriculture do not feel very comfortable with it.

### 3.2.2. Among Yowlè Respondents

Over 90% of Yowlè respondents have a sociological problem with the TSDU. Only 5.8% find no problem with latrine use. 14.5% of Yowlè respondents present the refusal of TSDU use and excreta handling as a cultural problem. Handling excreta is not culturally accepted among the Yowlè. Another 14.5% of our respondents find handling excreta repugnant. The process of using excreta arouses repugnance in most of them at the idea of handling "poo". The proportion of respondents who have come to terms with the idea of being locked up in the latrine because it is too small is 5.8%. The Yowlè, too, in their custom, do not put ashes on feces. 5.8% of our respondents retained this sociological consideration. In addition, the fact of being humiliated by mockery when carrying defecation pots to the fertilization site was mentioned by over 50% of our respondents. The proportion of Yowlè respondents who mentioned difficulties in using excreta was well over 93.33%. This can be explained by the fact that the Yowlè are not really involved in the knowledge of TSDU, let alone in the use of its by-products.

### 3.2.3. Among Baoulé Respondents

The TSDU is a latrine that is truly unknown to Baoulé communities. It is quite

different from the traditional latrines to which the communities are accustomed. However, it meets the needs of farmers by providing them with free organic fertilizer.

The TSDU has unusual characteristics that offend the social sensibilities of the communities.

Regarding the size of the latrine, the communities find it too small and feel trapped, suffocating inside. This was the case for 17% of respondents. The Baoulé also mentioned the problem of transporting excreta to the fertilization site. Indeed, 14.9% of Baoulé respondents found it demeaning to transport feces under the mocking and teasing gaze of others. 8.5% felt disgusted at the idea of consuming products fertilized with urine and feces. Upon analysis, the proportion of Baoulés who find no problem in using the TSDU is 53.2%. This is therefore higher than the proportion who mention at least one difficulty. It can be said that despite the lack of knowledge of the TSDU, the Baoulé communities have shown interest in the ECOSAN process at more than 50% for a community still attached to its customs and beliefs.

#### 3.2.4. Among Mossi Respondents

Most Mossis complain about the TSDU. However, 49% of those surveyed are familiar with the latrine, and have no sociological problems with it. More than half complain about one feature of the latrine to another. We found 38.5% of our respondents exposed to taunts when transporting the faeces pots to the fertilization site and when emptying them, because for them having the faeces pot behind a machine or on their head is repugnant. 12.5% find the process of using excreta, from the production of faeces, management in latrines, application on plants to consumption of the products that emerge, repugnant. The most astute TSDU feature is the addition of ash to the faeces. This practice is strictly forbidden in the community, as it causes stomachache and sometimes death. The use of TSDU challenges these habits and customs.

We can understand that the proportion of the Mossi population surveyed who go beyond sociological considerations is visibly lower than that of those who remain attached to their ideologies. The interpretation we can make of this phenomenon is that the TSDU is still little-known among the population, who criticize it in order to remain faithful to old practices.

### 3.3. Sociological Considerations of Urine and Faeces Use in Agriculture

In our study area, the use of excreta is poorly understood by communities; people have limited knowledge of its use as fertilizer. The social representations collected vary from one community to another and revolve around the reluctance to handle it.

**Figure 3** below shows the perception of excreta use by community.

Analyzing this table, we see that only 32.6% of all our respondents have a neg-

ative social representation of the use of excreta. They find the handling of excreta repugnant, especially its use in agriculture. On the other hand, 25.6% find it a good thing to use excreta in agriculture. For 22.5%, the ecological sanitation method using excreta: urine and feces in agriculture is welcome because the community was burdened by the expense of purchasing fertilizers. The use of urine and feces is therefore not a problem for 14.2% of our respondents. The proportion of the population who approve of the use of excreta goes beyond the repugnance that excreta themselves arouse at their mere mention or their views. However, 5.2% of our respondents who also approve of the use of excreta do not find it repugnant at all. In total, 67.5% of all our respondents approve of the use of excreta in agriculture.

### Community perceptions of excreta

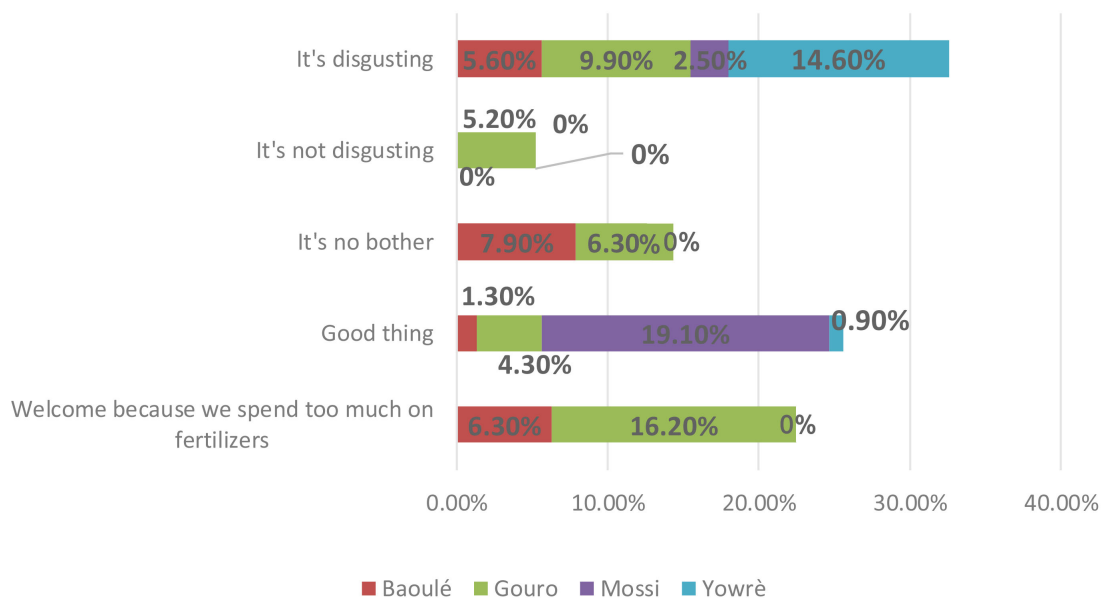


Figure 3. Perception of excreta use by community.

#### 3.3.1. Among the Gouro

16.2% of Gouro respondents believe that the use of excreta as fertilizer is welcome in the lives of farmers for whom paying for fertilizer had become very expensive. For 6.3%, it's not a problem to handle excreta for its intended use. 5.2% do not find it repellent at all, and for 4.3%, it's a good thing. Of the 41.8% of Gouro respondents who participated, only 9.9% find the use of excreta in agriculture repellent.

#### 3.3.2. Among the Yowlè

In the Yowlè community, more than 69% of the population has no knowledge of the use of excreta in agriculture. In this community, the use of excreta appears difficult due to the odor of urine and the repugnance of feces. To this end, more than 95% of our Yowlè respondents do not find it easy to use excreta. Only 5% of

the Yowlè community surveyed recognize that it is a good idea to use urine and feces as fertilizer in agriculture.

### 3.3.3. Among the Baoulé

Among the Baoulé, more than 73% appreciate fertilization with excreta. For them, fertilization with urine and feces is welcome in a farming community. 6.3% out of 21.1% of our respondents adopt productive sanitation as a substitute for the expense of chemical fertilizers, which have become increasingly expensive. Indeed, the use of urine and feces in agriculture is not a problem for 7.9% of the 21.1% respondents. However, 5.6% of the 21.1%, or 26.59%, still find the handling of excreta repugnant.

### 3.3.4. Among the Mossi

Among the Mossi, 19.1% out of 21.6% of respondents believe it is a good idea to fertilize their crops with urine and feces. The benefits are numerous and are mostly profitable for farmers, who will no longer have to spend money on fertilizer and who earn a lot of money from the increased productivity promoted by biological sanitation. Only 2.5% out of 21.6% find handling feces repulsive.

## 3.4. Sociocultural Representations of the Consumption of Products Fertilized with Excreta

In “Practical Advice for the Use of Urine in Agricultural Production”, [Richert et al. \(2011\)](#) outline the benefits of using urine on food crops by shedding light on the mechanism of use in all its aspects. The author highlights elements that facilitate the introduction of the new fertilizer: excreta fertilization. However, she does not address the sociocultural representations of the consumption of products derived from this fertilization. We will instead address communities’ perceptions of the consumption of agricultural products fertilized with urine and feces by community. [Table 2](#) below presents our results by community.

**Table 2.** Perceptions of the consumption of products fertilized with excreta.

Reasons for consumption Baoulé	Baoulé	Gouro	Yowrè	Mossi
no problem, it doesn't bother you (yes/no)	31.90	28.50	1.40	53.10
idea of poop (yes/no)	35.10	45.70	79.70	22.90
idea of disgusting (yes/no)	12.80	8.10	13.00	0.00
we don't smell like poop anymore (yes/yes)	20.20	12.90	5.80	24.00
Very good plants (yes/no)	0.00	4.80	0.00	0.00
<b>Total (yes)</b>	<b>52.10</b>	<b>46.20</b>	<b>7.20</b>	<b>77.10</b>

Source: 2016 survey data.

### 3.4.1. Among the Gouro

When asked whether people can consume products fertilized with their urine and feces, more than half of the Gouro population answered no. Indeed, 53.8% of the

Gouro population surveyed frankly stated that they cannot easily consume agricultural products fertilized with excreta for various reasons. A majority of 45.70% of them mentioned the idea of poop, that is, having put feces or urine on these plants, as a hindrance, a psychological block that prevents them from comfortably consuming these products. And 8.1% acknowledged that it is truly disgusting to think about consuming excreta again. On the other hand, 46.2% can comfortably consume products fertilized with excreta. Among them, 28.5% say they have no problem consuming these products because it doesn't bother them. When feces are sanitized, they become like earth; they no longer smell like poop; they are completely transformed. Their use and consumption of products resulting from this fertilization should therefore not be a problem. This opinion is shared by 12.9%.

In short, the perceptions that the Gouro communities have of the consumption of products fertilized with urine and excreta are mostly negative. More than 50% say they cannot comfortably consume products fertilized with urine and excreta.

#### **3.4.2. Among the Yowlè**

In the Yowlè community, 92.8% of respondents say they cannot comfortably consume products fertilized with urine and feces. This is because they are used to the idea of consuming poop. In fact, 79.7% of our Yowlè respondents imagined the consumption of these products as similar to the consumption of feces themselves. This is simply disgusting for 13% of respondents. However, there is still a minority of people, 7.2%, who believe they can consume products fertilized with urine and feces without difficulty. Among them, 1.4% find no problem with consumption, and for 5.8%, poop no longer smells. The consumption of products fertilized with urine and feces is clearly not accepted within the Yowlè community surveyed.

#### **3.4.3. Among the Baoulé**

The majority of the Baoulé community is able to consume products fertilized with urine and feces without any problems. Indeed, 52.1% answered yes to the question "can you easily consume products fertilized with excreta?" Among them, 31.9% say they have no problem simply because it's not bothersome. However, there is also a significant number, 47.9% of Baoulé, who cannot easily consume products fertilized with urine and feces. 35.1% mention the idea of feeling like they are consuming poop when consuming these products. And for 12.8%, it's disgusting. It can be said that the Baoulé community has adopted productive sanitation to the point of finding more than 50% who can use urine and feces on plants as fertilizer and finding more than 50% who can easily consume the products resulting from this fertilization.

#### **3.4.4. Among the Mossi**

In our study area, the use of excreta is poorly understood by communities; people Like the Baoulé community, the majority of the Mossi community is also able to consume products fertilized with urine and feces without any difficulty. To this end, 77.1% of Mossi respondents can easily consume products fertilized with excreta. Among them, 53.1% find no problem because it is not bothersome. Only

22.9% consider this consumption a psychological problem because, for them, the idea of directly consuming feces remains in their minds.

### **3.5. Benefits of Purchasing a Waste Disposal Unit and Using Excreta**

#### **3.5.1. Among the Gouro Respondents**

Among the Gouro, 110 out of 186 households have neither a waste disposal unit nor a traditional latrine. For those who have built a waste disposal unit, the primary motivation is to have free organic fertilizer. Thus, 34 out of 186 respondents, or 7.6%, built waste disposal units for fertilizer. 17 out of 186 respondents, or 3.8%, built waste disposal units just to have a latrine. 6 out of 186 respondents, or 1.3%, built waste disposal units to be like the others. 7 out of 186 respondents, or 1.6%, built waste disposal units to have a latrine and fertilizer. In total, only 64 households out of 186, or 14.3%, built TSDUs for various reasons.

#### **3.5.2. Among the Yowlè Respondents**

In our study area, the use of excreta is poorly understood by communities; people In the Yowlè community, the majority of respondents, 50 out of 69, do not have latrines. Only 11 out of 69 respondents, or 2.5%, built latrines to obtain free organic fertilizer. And 6 out of 69 respondents, or 1.6%, built latrines for hygiene and health reasons. It is clear here that the Yowlè community has not at all supported the construction of ECOSAN latrines, as only 17 out of 69 households, or 3.8%, have built ECOSAN latrines.

#### **3.5.3. Among the Baoulé Respondents**

people In the Baoulé community, more than half of the respondents, or 50 out of 96 people, or 11.2%, did not build a TSDU but a traditional latrine. This compares to 10% who built a TSDU. However, the reasons given for construction varied. 7.6% were interested in the fertilizer. These farmers hope to benefit from their latrines by purchasing fertilizer to fertilize their soils with the aim of increasing their agricultural productivity. And 2.2% built a TSDU simply to have this type of latrine at home.

#### **3.5.4. Among the Mossi Respondents**

In our study area, the use of excreta is poorly understood by communities; people Among the Mossi, most did not build a latrine but rather traditional latrines that they are accustomed to using. 63 out of 96 respondents, or 14.2 out of 21.6, preferred traditional latrines. However, 4% of Mossi respondents, or 18 out of 96, built a latrine to get free fertilizer. 10 out of 96 respondents, or 2.2%, built a latrine just to have a latrine and to get free fertilizer. And 5 out of 96, or 1.1%, just to have a latrine. In total, 33 households, or 7.3%, expressed interest.

## **4. Discussion**

This study, conducted in the Bouaflé department, allowed us to identify the social representations of various ethnic communities there. It demonstrated that the

perception of excreta, the sanitation situation in the communities, the construction and use of TSDUs, the production of urine and feces in TSDUs, their sanitation and application to plants, as well as the consumption of excreta-fertilized products are expressed in diverse ways and vary according to the beliefs and ideology of the people. Thus, this study is consistent with that of [Mariwah & Drangert \(2011\)](#) in Ghana, for whom people's attitudes and perceptions towards excreta vary from one culture to another and even within the same culture. The study of Mariwah shows that social beliefs cannot be unanimous. This is why [Moscovici \(1961\)](#) preferred the notion of social representations, which he defines as "universes of opinions" that are not unanimously felt within a given society, to the notion of collective representation. For social representations lead us to perceive the same object in different and sometimes personal ways within society. Through these two studies, we can clearly see that the social representations that communities make of a fact are specific to them and therefore cannot be shared. It varies from one community to another.

Among the Gouros, the idea of repugnance is common, but excreta is perceived as natural. This social perception is different from that of the other three ethnic groups. This is why 20% of the Gouros surveyed answered "yes" to the question "is it good to defecate in the open air" while all other ethnic groups unanimously answered "no". Among the Gouros, TSDU is socially accepted. The Gouro do not consider defecation and excreta a taboo. They consider it natural and are not embarrassed to talk about it. The Gouro have no institutionalized or hereditary chieftaincy. Nor is there any formal kingship. The people are hierarchical and governed by a council of elders. In fact, village populations are made up of politically autonomous family units. According to [Meillassoux \(1999\)](#), Gouro governance is highly decentralized. The village's political staff is made up of the elders of each family unit, known as the "Goniwuo". This means that power has no influence on the acceptance of productive sanitation. The rapid acceptance of the Gouro community is essentially linked to the cultural predispositions of these people.

Despite the fact that they feel comfortable in the open air, those who are interested in the use of excreta in agriculture do not feel bothered by the collection and management of this excreta. However, more than 20% of the Gouros surveyed have difficulty consuming products fertilized with excreta, which arouses disgust in them. For the Yowles, excreta are considered carriers of life. This perception of excreta was addressed by [N'donko \(1993\)](#), who presents the perception of excreta among the Yassa people, Cameroonian fishermen, for whom fresh excreta must be immersed in water to eliminate the life it carries and prevent criminals from using it against the individual. Furthermore, more than 90% of Yowles surveyed have difficulties with TSDU and the entire mechanism of excreta management, as well as the consumption of derived products. Among the Baoulé, excreta in contact with ash can attract a curse, which is why it is strictly forbidden for them to come into contact with ash. This perception is also the same among the Yowles, who also do not put ash on their feces. Elsewhere, other people such as the Bamiléké, Cameroonian farmers, also have this perception of excreta. For the Bam-

ileke, it is dangerous to defecate in a cultivated field for fear that the excreta will be incinerated, causing the transgressor to come out of the anus (N'donko, 1993). The Mossi makes excreta a taboo subject because, according to them, it reveals nudity in addition to the repugnance it gives off. The Mossi remains attached to several ideologies with regard to TSDU. The interpretation that emerges from this phenomenon is that TSDU remains unknown to the populations who criticize it in order to remain in their old practices. The majority of those interviewed “do not agree” with the fact that excrement is waste and are ready to use it as fertilizer, although a majority “agree” with the fact that excrement can present health risks. Most of the respondents complained about TSDU. This is explained by the habit of open defecation, the shame of being seen entering a latrine or the repugnance caused by the management of excreta, from the latrine to the fertilization of plants and the consumption of fertilized products. We can thus say that in our study area, more than half: 53.8% of our respondents cannot easily consume products fertilized with urine and feces. Only 46.2% go beyond their apprehensions. This result is quite different from that of N'da et al. (2007) the consumption of products fertilized with excreta does not cause any problem in the Adjoukrou community of Petit Badien. However, social representations of TSDU and the use of hygienized human excreta in agriculture are influenced by the idea of having free organic fertilizer which would implicitly enhance their agricultural production. This study is similar to that of Moyenga (2024) which shows, using a qualitative approach, how the action of promoters of ecological latrines has changed the representations of the populations of the Commune of Réo (Burkina Faso) around these fecal matters. Indeed, the population surveyed agreed to build a TSDU in their households because they were motivated by free organic fertilizer, the physical appearance of fertilized plants and the abundance of agricultural production. Therefore, the process of hygienization of excreta before their use in agriculture convinced a segment of the population who considered that biofertilizers are the solution to their problem. However, for an adequate use of biofertilizers, the work of (Phuc et al., 2006) recommends that particular emphasis be placed on the health risks of using latrine waste in agriculture.

## 5. Conclusion

Diverse perceptions of excreta and their uses in agriculture were revealed by the rural communities of Bouaflé. The Yowles and Baoulés view excreta as life-giving. This is why it is strictly forbidden to put ash on feces, much less expose them to the open air. For the Mossi, feces and defecation reveal nudity. The subject is therefore taboo in this community and cannot be easily discussed due to the perceptions held by the population. The Gouros, on the other hand, consider excreta and defecation as natural as food and have no problem discussing them, but they find their uses in agriculture repugnant. The representations that the populations have of excreta and their use as fertilizer are contradictory to the principles of the TSDU proposed to them. In addition, all the communities studied are unanimous on the fact that excreta and their uses in agriculture arouse in their repugnance.

On the other hand, they are motivated by the idea of free organic fertilizer. But ultimately, the constraints of the use of TSDU and the various pejorative perceptions of the use of excreta, have not prevented the populations from engaging in the process of ecological sanitation in order to improve their agricultural conditions. Because although the mechanism of productive sanitation does not correspond to the sociocultural contexts of the populations, and the social representations that the populations have do not really allow them to adopt it, the improvement of their living conditions by obtaining this organic fertilizer was their source of motivation.

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### Conflicts of Interest

The authors declare no conflicts of interest.

### References

- Bartels, J., & Reinders, M. J. (2011). Consumer Innovativeness and Its Correlates: A Propositional Inventory for Future Research. *Journal of Business Research*, *64*, 601-609. <https://doi.org/10.1016/j.jbusres.2010.05.002>
- Commodoafrica (2013). *La maladie du swollen shoot affecte 12% des plantations de cacao en Côte d'Ivoire*.
- Dagerskog, L. (2006). *Assainissement écologique et les objectifs du millénaire pour le développement dans l'espace du réseau CREPA*. [https://www.susana.org/\\_resources/documents/default/2-1909-fr-ecosan-nl5-2002.pdf](https://www.susana.org/_resources/documents/default/2-1909-fr-ecosan-nl5-2002.pdf)
- Esrey, S. A., Gough, J., Rapaport, D., Sawyer, R., & Vargas, J. (2001). *Assainissement écologique*. 78 p. <https://fr.ircwash.org/sites/default/files/Esrey-1998-Assainissement.pdf>
- Gnagne, T., Klutse, A., Konan, K. F., Kouassi, K. F., Comoé, K. B., & N'da, C. (2007). Introduction de l'assainissement écologique en Côte d'Ivoire. *Sud Sciences et technologies*, *15*, 33-39.
- Jodelet, D. (1984). Représentations sociales: Phénomènes, concepts et théorie. In S. Moscovici (Ed.), *Psychologie Sociale* (pp. 357-378). Flammarion.
- Mariwah, S., & Drangert, J. (2011). Community Perceptions of Human Excreta as Fertilizer in Peri-Urban Agriculture in Ghana. *Waste Management & Research: The Journal for a Sustainable Circular Economy*, *29*, 815-822. <https://doi.org/10.1177/0734242x10390073>
- Meillassoux, C. (1999). *Anthropologie économique des Gouro de Côte d'Ivoire*. Éditions de l'École des hautes études en sciences sociales. <https://doi.org/10.4000/books.editionsehess.94>
- Moscovici, S. (1961). *La psychanalyse, son image et son public*. Paris, PUF
- Moyenga, M. (2024). De la déjection au fertilisant. Utilisation des excréta humains en

- agriculture dans la commune de Réo (Burkina Faso). *Revue Internationale Dónni*, 4, 189-199.
- N'da, C., Gnagne, T., Comoe, B., & Kluste, A. (2007). De la pratique culturelle endogène sur les dépotoirs familiaux "lelougoun" à l'acceptation de l'assainissement écologique en milieu communautaire Oujoukrou: Le cas de Petit-badien. *Kasa Bya Kasa*, 11, 20-38.
- N'Da, P. (2006). *Méthodologie de la recherche de la problématique à la discussion des résultats: Comment réaliser un mémoire, une thèse d'un bout à l'autre*. <https://mediatheque.institutfrancais.ci/catalog/details/6174fb23c42a4a14ae611c0a>
- N'goran, S. I., Gnagne, T., Zouhoun, L. M., & Konan, K. F. (2010). L'assainissement écologique à l'épreuve du temps en milieu rural ivoirien forestier: Cas de petit badien S/P de Dabou, Côte d'Ivoire. *Le journal des sciences sociales*, No. 7, 15.
- N'donko, F. T. (1993). *Représentation culturelle des excréments: Étude comparative des déchets du corps chez les populations de la savane et de la côte du Cameroun* (350 p.). Lit Verlag. <https://lib.ugent.be/catalog/rug01:000295812>
- Phuc, P. D., Konradsen, F., Phuong, P. T., Cam, P. D., & Dalsgaard, A. (2006). Practice of Using Human Excreta as Fertilizer and Implications for Health in Nghean Province, Vietnam. *The Southeast Asian Journal of Tropical Medicine and Public Health*, 37, 222-229.
- RGPH (2021). *Résultat Globaux par sous-préfecture en Côte d'Ivoire (37 p)*. <https://plan.gouv.ci/assets/fichier/RGPH2021-RESULTATS-GLOBAUX-VF.pdf>
- Richert, A., Gensch, R., Jönsson, H., Stenström, T., & Dagerskog, L. (2011). *Conseils pratiques pour une utilisation de l'urine en production agricole*. Stockholm Environment Institute (SEI).
- SANDEC (2000). *Summary Report of Bellagio Expert Consultation on Environmental Sanitation in the 21st Century, 1-4 February 2000*. Water and Sanitation in Developing Countries (SANDEC).
- Yapi, E. A. M., N'krumah, T. A. S. R., Gnagne, T., & Tiembre, I. (2018). Effects of Hygienized Urine and Faeces on the Prevalence of Endemic Bilharziasis: Cases of Two Villages of Bouafle in the Ivory Coast. *EWASH & TI Journal*, 2, 119-133. <http://revues.imist.ma/?journal=ewash-ti>