

# FODDER SUPPLY TO THE CENTRAL-WESTERN PART OF COTE D'IVOIRE: THE PERIPHERAL RURAL AREAS USUFULNESS IN DALOA

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## **Summary:**

Livestock farming of ruminants which results in fodder trade is a profitable activity in the city of Daloa. Every evening there's an influx of two-wheel vehicles that transport fodder from peripheral rural areas to the city neighbourhoods. The purpose of this article is to point out the usefulness of peripheral rural areas in the fodder supply to the city of Daloa. The documentary research, direct observation and survey of fodder picker-sellers and breeders enabled us to gather the necessary data for this study. The results of our investigations reveal that fodder species sold in Daloa belong to the *poaceae* and *fabaceae* family. Most of the participants in this field are young male ivorians (52%) who are illiterate. The survey finally shows that fodder trade is a profitable one which allows participants to provide for their daily needs.

**Keywords:** Daloa, rural species, fodder, picker-sellers

## ***Approvisionnement du centre-ouest ivoirien en fourrage : utilité des espaces ruraux périphériques de Daloa***

### **Résumé**

L'élevage de ruminants qui occasionne le commerce de fourrage est une activité prospère dans la ville de Daloa. Chaque soir, des flux d'engins à deux roues acheminent les fourrages des espaces ruraux périphériques vers les quartiers. Cet article vise à montrer l'utilité des espaces ruraux périphériques dans l'approvisionnement de la ville de Daloa en fourrage. La recherche documentaire, l'observation directe et l'enquête auprès des préleveurs-vendeurs de fourrage et des éleveurs ont permis d'avoir des données

nécessaires à la réalisation de cette étude. Les résultats des investigations révèlent que les espèces fourragères vendues à Daloa appartiennent à la famille des *poaceae* et des *fabaceae*. Les acteurs de la filière sont en majorité des jeunes ivoiriens (52%) de sexe masculin, et illettrés. L'étude montre finalement que le commerce de fourrage est une activité rentable qui permet aux acteurs de subvenir à leurs besoins quotidiens.

**Mots clés :** Daloa, Espaces ruraux, Fourrages, Préleveurs-vendeurs.

### *Abastecimiento del centro-oeste de Costa de Marfil en forrajes: utilidad de los espacios rurales periféricos de Daloa*

#### **Resumen:**

La cría de rumiantes que sustenta el comercio de forrajes es una actividad próspera en la ciudad de Daloa. Todas las tardes, flujos de vehículos de dos ruedas transportan forraje desde las zonas rurales periféricas hasta los barrios. Este artículo pretende mostrar la utilidad de las zonas rurales periféricas en el abastecimiento de forrajes a la ciudad de Daloa. La investigación documental, la observación directa y la encuesta a recolectores-vendedores y criadores de forraje proporcionaron los datos necesarios para llevar a cabo este estudio. Los resultados de las investigaciones revelan que las especies forrajeras comercializadas en Daloa pertenecen a las familias *poaceae* y *fabaceae*. Los actores del sector son en su mayoría jóvenes marfileños (52%) hombres y analfabetos. El estudio muestra en último lugar que el comercio de forrajes es una actividad rentable que permite a los actores satisfacer sus necesidades diarias.

**Palabras clave:** Daloa, Áreas rurales, Forrajes, Recolectores-vendedores.

#### **Introduction**

Transhumance livestock farming is widely practised in the northern and central parts of Côte d'Ivoire by farmers and Fulani people from the Sahel countries. In this type of livestock farming, animals go around searching for food and in their path they destroy crops and harvests. This results in several conflicts between farmers and animal breeders. In addition to this type of livestock farming, urban and out-of-town livestock farming is developing. The latter form of breeding consists in keeping animals within buildings (sheepfolds, pens etc...) and bring them food on a daily basis, thus abiding by the law prohibiting the roaming of animals in Côte d'Ivoire<sup>1</sup>. Supply of livestock feed to these breeding places requires a lot of effort especially in the dry season, a period during which breeders have difficulty to provide animals with feed. They travel long distances in search of plants and go from place to place in search of food for their livestock.

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<sup>1</sup> Law N° 2016-413 of June 15<sup>th</sup>, 2016 relating to livestock transhumance and movement.

Located in the centre-western part of Côte d'Ivoire, the city of Daloa is 141 km away from Yamoussoukro (political capital) and 372 km away from Abidjan (economic capital). It has 266,000 inhabitants (RGPH, 2014) that should be fed while these populations are not fundamentally livestock farmers. In Daloa, breeding in the backyard is spreading in certain neighbourhoods such as Dioulabougou, Sissoko, Soleil, Marrais, Abattoir 1 and 2. Every evening, the influx of two-wheel vehicles carry fodder from rural areas to the city neighbourhoods. As a result, fodder supply to the livestock production points in the city is a major concern. From these established facts arises this question: What's the contribution of out-of-town areas in fodder supply to livestock production points?

This survey aims at pointing out the contribution of peripheral areas in fodder supply to the livestock production points in the city of Daloa.

## I. Material and method

The study is based on a summary of data gathered on fodder supply to cities, which permitted us to assess the channel to supply the ruminants in Côte d'Ivoire. This method was accompanied by a survey on the ground. This was preceded by the observation of fodder sales points in the city. These sites are: big mosque of the city in Dioulabougou, livestock market in Abattoir 1 and Adja mosque intersection in Abattoir 2, in Orly and Millionaire neighbourhoods. This observation made it possible to identify the main routes of origin: Daloa-Gonaté, Daloa-Issia, Daloa-Zoukougbeu, Daloa-Zébra, Daloa-Bédiala and Daloa-Bowala. Thanks to these road links it was possible to resort to observations. The monitoring of collectors in the fodder gathering areas permitted to identify the different types of plant species. The identification of different plant species was carried out with the use of a smartphone thanks to the PlantNet Android app. Finally, a survey of the participants who run this sector was conducted to find out the socio-demographic features of collectors, the marketing circuit and the problems associated with this activity. This investigation was carried out with 75 collectors-sellers (see table 1).

*Table 1: Distribution of respondents according to point of sales*

Neighbourhoods	Collectors-sellers
Dioulabougou	41
Abattoir 1	21
Abattoir 2	13
<b>TOTAL</b>	<b>75</b>

Source: Our surveys, August, 2022

The criteria used for this survey are the location of sales points, gender, the availability and length of time in the business (to be in the trade for more than two years.) At the end of our investigation, the data processing was done using Word, Excel, PlantNet and Adobe Illustrator CS11 software. Word and Excel were used for keyboarding, statistic processing of data and creation of tables.

## II. Results and discussion

### 2.1. Results

#### 2.1.1. Typology of fodder sold in the city of Daloa and places of origin

##### 2.1.1.1. Types of fodder sold in the city of Daloa

The species of fodder sold in the city of Daloa belong to two main families: *poaceae* and *fabaceae*. The *poaceae* are grasses (Guinea grass, see photograph 1) while the species of the *fabaceae* family are legumes (see photograph 2). In Daloa, these fodder are sold exclusively fresh, this means that they are green fodder.



Photograph 1: View of *panicum maximum* (jacq.) species    Photograph 1: View of *Ficus exasperata* Vahl species  
October 2022

These two plant species belong to the *poaceae* and *fabaceae* families. *Ficus exasperata* Vahl (photograph 2) is the most sold and wanted species in Daloa. It represents 70% of fodder. It is nicknamed “scraper” because of its roughness, the fact that it is agreeable to taste<sup>2</sup>, its nutritional value and the productivity of the plant species. This plant species is used as food for

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<sup>2</sup> According to F.A. KOUASSI and all. (2010), being agreeable to the taste, is the features of food that causes reaction of the animal’s senses. It is the consequence of an animal’s appetite for a given food (Church, 1979; Matthews, 1983).

small ruminants (sheep, goats). The other species, *panicum maximum (jacq.)* is used 30% of the time to feed cattle in the city.

### 2.1.1.2. Fodder supply

The fodder sold in Daloa is made up of natural plant species. These plant species are collected from fields and fallow land along roadsides, around unfinished buildings and undeveloped plots of land in outlying areas. According to our survey of the pickers-sellers, it is difficult to find fodder in a virgin forest. *Poaceae* are harvested from fallow land and cocoa or coffee plantations (see photograph 3) during rainy season and in the lowlands during dry season. The equipment used to harvest these plants species is sickles and knives. Legumes or *Fabaceae* are always available in fallows and plantations. Farmers use machete to cut plants (see photograph 4).



Photograph 3: View of a *panicum maximum (jacq.)*  
In Zépréguhé October 2022



Photograph 4: View of a harvest field in Zakoua,  
October 2022

Photograph 3 and 4 show harvesting fields. In the first field (photograph 3), we observe a field composed of *panicum maximum (jacq.)* of the grass family. The second field (photograph 4) is composed of legumes (*Ficus exasperate Vahl* and *chromolaena adorata*). In this field, there is a picker-seller with a machete in his right hand and *Ficus exasperate Vahl* leaves in his left hand.

The fodder sold in the city of Daloa comes not only from the immediate peri-urban area, distant rural area, and deep rural area, but also from the city's main roads links: Daloa-Gonaté, Daloa-Issia, Daloa-Zoukougbeu, Daloa-Zaïbo and Daloa-Bédiala (see figure 1).

Figure 1: Collection zones of plant species

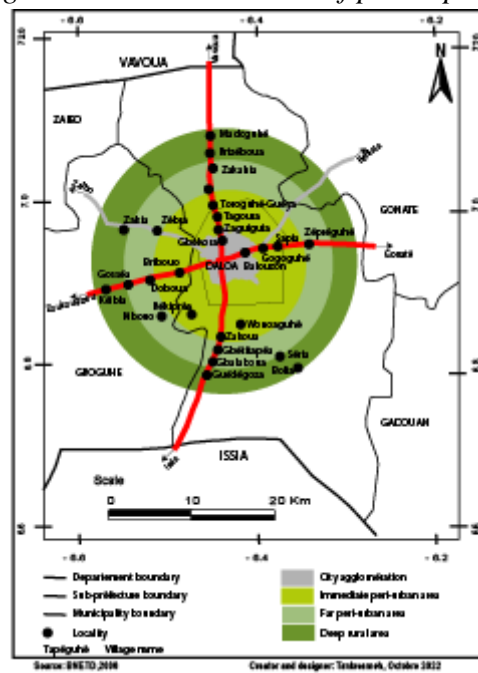


Figure 1 highlights three areas of plant species collection: immediate peri-urban area, far peri-urban area, and deep rural area. The immediate peri-urban area is 10 km wide. It includes communal villages (Balouzon, Sapia, Gbokora, Tagoura, Zaguiguia, Toroguhé-Guéya), a few non-communal villages (Wanoagué, Békipréa) and one village in the sub-prefecture of Gboguhé (Bribouo). In communal villages, the species are collected in subdivided areas, around unfinished buildings, whereas in the non-communal villages, they are collected in fallow land, along roadsides, and in low-lying areas. The remote peri-urban area includes the villages of Daloa sub-prefecture (Zakoua, Bétitapia, Gbalaboua, Zépréguhé, Tapéguhé, Zakaria, Zébra, Doboua, Gosséa and Kibouo). The exploitation of this area is done during the rainy season. It is distant 20 km away from the city of Daloa. The locations where plant species are harvested are identical to those above. The deep rural space is little exploited because of the presence of perennial agriculture (coffee, cocoa and cashew nuts, etc.). However, in the event of fodder shortage, farmers exploit the edges of roads and villages (Guédégoza, Bolia, Sérié, Madoguhé, Brizéboua, Zahia-Zébra, Kéïbla) or make incursions into the plantations, with all the risks that this entails. This area is located 30 km from Daloa.

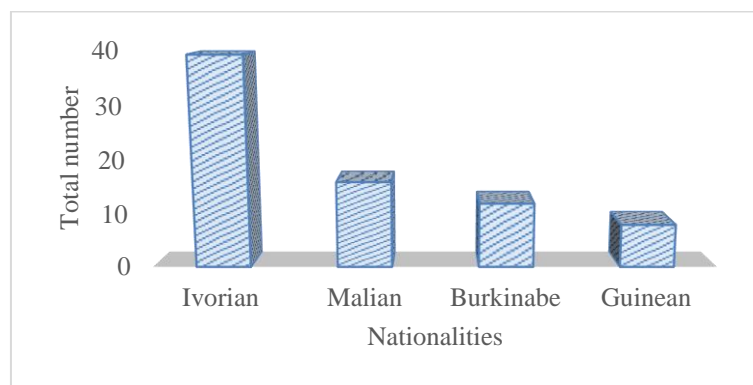
In sum, the collection sites for plant species are conditioned by the urban dynamics of Daloa. This spatial extension increased from 838 ha in 1975 to 1,340 ha in 1980 and then to 3,300 ha in 2007 (City Atlas, 2007, P. 54 and A. A.G. Adou, E.K. Yao and D-C. Gouaméné, 2017, p. 222) to 8,000 ha in 2014 (K. E. Yao, D-C. Gouamené and K. Tano, 2018, P. 139). It has engulfed peri-urban villages (Balouzon, Sapia, Gbokora, Tagoura, Zaguiguia, etc.) to such

an extent that today plant species have become rare on the edges of the city. Also, the intensity of the dry season forces collectors to travel long distances, as the city of and its outskirts have only received rainfall varying between 18 and 288 mm since 2009 (and K. Tano, A. A. Moussoh. 2021, P. 727).

### 2.1.1.3. An activity dominated by Ivorians and exclusively reserved for men

The activity of gathering plants for livestock feed in Daloa is held by Ivorians of northern origin. In fact, out of 75 collectors surveyed in the city of Daloa, 39 are Ivorians against 36 non-Ivorians (see figure 2).

Figure 2: Distribution of collectors/sellers by nationality



Source: Our surveys, October, 2022

Figure 2 shows that the majority of fodder collectors in Daloa are Ivorians (39). These are composed of 22 Senoufo, 9 Malinke from Odienné, 6 Koyaka, and 2 Fulani. These Ivorians are followed by Malians (16) and Burkinabe. The high proportion of Ivorians in this activity is linked to the lack of employment. The other nationalities do it out of passion and tradition. In addition, this activity is carried out by gardeners, ironworkers, well-diggers, guards, etc. They do this trade as a sideline. It is exclusively the prerogative of men aged between 15 and 60.

Table 2: Distribution of collectors-sellers by age and gender

Age groups	Men	Women	TOTAL
] 15-20]	8	0	<b>8</b>
] 20-50]	42	0	<b>42</b>
] 50-60]	25	0	<b>25</b>
<b>TOTAL</b>	<b>75</b>	<b>0</b>	<b>75</b>

Source: Our surveys, October, 2022

Table 2 shows that the fodder trade is an activity that requires physical effort. In fact, out of 75 pickers surveyed, 42 are aged between 20 and 50, compared to 25 of them who are

over 50. The young people whose age varies between 15 and 20 are less represented. They are 08 in number. This activity excludes the female gender. Most of the collectors have had their traditional and religious (Islamic) marriage. 66% of the respondents were married at the mosque. Most of them have a primary school academic standard. (See table 3).

*Table 3: Distribution of sample takers/sellers by academic and marital status*

Academic standard \ Marital status	Marital status		Total
	Unmarried	Married	
Arabic	3	3	6
No schooling	5	30	35
Primary school	15	16	31
Secondary school	3	0	3
<b>Total</b>	<b>26</b>	<b>49</b>	<b>75</b>

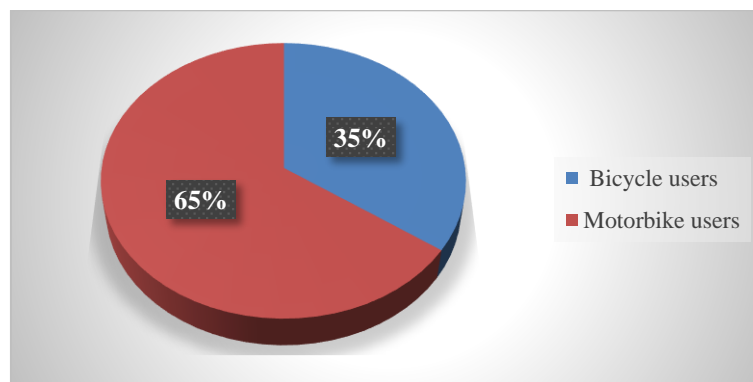
Source: Our surveys, October, 2022

Table 3 shows that pickers have a very low academic standard. Most of them are heads of households. This is explained by the fact that many of them have dropped out of school to support their families. 35 out of 75 respondents have no education at all, compared to 31 who have primary school education, 3 of them have secondary education and 3 who have some knowledge of Arabic.

#### **2.1.1.4. Means of transport essentially dominated by two-wheel vehicles**

The means of transport used by harvesters to supply the city of Daloa with fodder are bicycles (see photograph 2) and motorcycles. However, motorcycles are the most used (65%). They are followed by bicycles (35%).

*Figure 3: Distribution of pickers/sellers according to means of transport used*



Source: Our surveys, October, 2022



The use of motorcycles and bicycles in this activity is justified by the fact that these vehicles are easy to use on village tracks, where roads and paths leading to collection fields are not very practicable. However, the high proportion of motorcycles used allows fodder collectors to travel long distances and load large quantities of fodder (Photo 6). However, this requires some spending on fuel and vehicle spare parts. Bicycles require some physical effort. (See photograph 5).



Photo 5: View of a picker-seller on a bicycle

Photo 6: View of a picker-seller near his motorbike

October, 2022

Images 5 and 6 show the most common means of transportation used by picker-sellers. In photo 5, a picker-seller in his sixties is seen transporting fodder by bicycle. He has a toothpick in his mouth. In photo 6, we see another man in his fifties near his motorcycle loaded with fodder. He is ready to start. These individuals are carrying *Ficus exasperata Vahl*. This confirms that *Ficus exasperata Vahl* is the most prized fodder in Daloa.

### **2.1.2. Fodder marketing in Daloa**

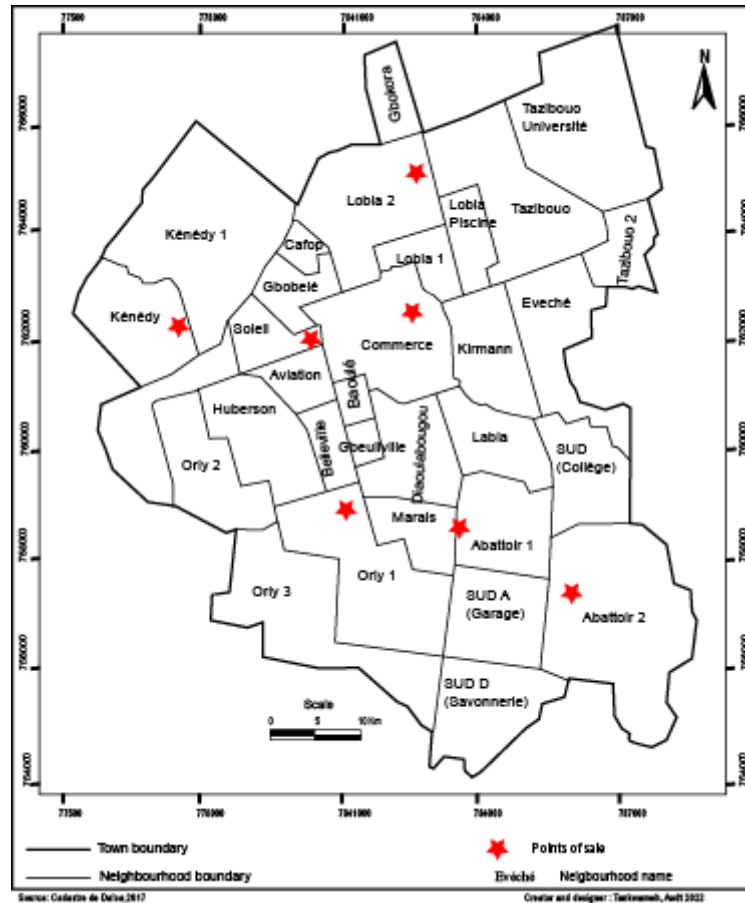
Daloa's fodder supply network relies on various supply channels. This section discusses the different routes followed by collectors from collection areas to sales points in Daloa. There are two types of channels: the channel of fixed collectors-sellers and the channel of itinerant collectors-sellers.

#### **2.1.2.1. The channel of fixed picker-sellers**

In this channel, pickers-sellers display the fodder every evening (between 4 and 6 p.m.) at a fixed location. There are four places where fodder is sold in the city of Daloa. These are Gbêbani space in Dioulabougou district opposite the Great Mosque, the sales place of Betai market, in Cisseko district (opposite Antoine Gauze high school) and the crossroads of the Adja mosque in Abattoir 2 district. The Gbêbani area is home to most fodder collectors and sellers. At this site, we interviewed 34 people out of 50 pickers-sellers, compared to 11 pickers-sellers

at the livestock market in the Abattoir 1 district, 3 at the Adja mosque intersection in Abattoir 2 district, and 2 in the Cisseko district (see figure 4).

Figure 4: Location of fodder points of sales



The strong presence of picker-sellers in Gbêbani area is due to the fact that the area is located opposite to Sissoko, Marrais, and Orly neighborhoods, where ruminant breeding is widespread. In addition, some collectors-sellers in Gbêbani area sometimes sell at the livestock market (Abattoir 1) and at Adja Mosque crossroads (Abattoir 2). Their settlement in these places is intended to bring them closer to ruminant breeders who are numerous according to collectors-sellers.

Fodder is sold according to the type of family to which the plant species belongs. Indeed, fodder from the legume or *fabaceae* family is sold exclusively in bundles (see photograph 7), while fodder from the *poaceae* family is sold in bags (see photograph 8). This sales method makes it affordable to all.



Photograph 7: Display of *fabaceae* at the marketplace  
October, 2022



Photograph 8: Display of *Poaceae*.

Two sales methods can be observed in these images. *Fabaceae* species tied in bundles (see photograph 7) are sold at CFA 100 francs each. These species are intended for small ruminant breeders. These farmers, who do not have sufficient financial means and not many animals, prefer this method of purchase. While plant species of the *poaceae* type are sold at CFA 1,000 francs per unit. They are generally intended for cattle breeders.

#### 2.1.2.2. The channel of itinerant collectors-sellers

This differs from the previous one in the mobility of the collectors-sellers. They deliver the feed to their clients each evening. They go to the client's place each evening to deposit the quantity and quality of plant species requested by the client. These actors are 25 in number that is 33.3% of those surveyed.

#### 2.1.2.3. A profitable activity

One of the specific feature of fodder sale in Daloa is the absence of price fluctuations. It is a fixed price. It is not linked to the availability of fodder, which is influenced by seasonal variations. A bag of grass (*poaceae*) is always sold at CFA 1,000 francs and a bale of legumes at CFA 100 francs, regardless of the season of the year. In fact, the profits of picker-sellers vary between CFA 3,300 and 5,000 francs per day (see table 4).

Table 4: Estimated earnings of collectors-sellers in CFA francs

Means of transport	Income	Spending	Profits
Motorbike users	8 000	3 000	5 000
Bicycle users	4 000	700	3 300

Source: Our surveys, October, 2022

Table 4 shows that the financial gain of each fodder harvester depends on the means of transport available to them. Thus, the harvester-seller who uses a motorcycle can sell an average of CFA 8,000 francs per day. In the case of a bicycle user, the average daily sale is only CFA 4,000 francs. The expenses are linked to the means of transport used and the road fees, which amount to CFA 3,000 francs per day, including CFA 2,000 francs for fuel and CFA 1,000 francs for road fees<sup>3</sup>. While the pickers and sellers who use bicycles pay extra CFA 200 francs as road expenses.

From the above, we can deduce that the average monthly income of a picker-seller using a motorcycle as a means of transport is estimated at CFA 150,000 francs and that of a bicycle is CFA 99,000 francs.

### ***2.1.3. Problems linked to the supply of fodder for ruminants in Daloa***

The activity of pickers-sellers is a profitable one. However, they are confronted with problems linked to the access to collection sites, road fees and the conservation of plant species.

#### ***2.1.3.1. Problems linked to access to collection sites***

Plant species for livestock feed grow naturally in fields and in the bush. These areas belong either to the village community or to an individual (farmer). Access to these areas without the permission of the owners is an offence. However, most collectors do not ask these owners for permission to collect. When they are caught by the owners or the village community, a discussion ensues between them (see photograph 9). The farmers confiscate the equipment of the harvester-seller. The farmers accuse them of theft and destruction of agricultural land. Collectors are often brought before the traditional chiefs, where they have to pay a fine.



Photograph 9: View of a discussion between a farm owner and a collector-seller; October, 2022

Photograph 9 shows a discussion between a farmer and a collector-seller. The farmer accuses him of repeated theft from his field. As a result, the farmer took away his working

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<sup>3</sup> Road fees : money paid to rangers

equipment (a machete). Following the discussion, the collector-seller had to pay a fine to the farmer, which amounts to CFA 5,000 francs.

### **2.1.3.2. Road harassment and conservation of plant species**

Road harassment can be observed in the various police checkpoints in the city of Daloa. Security and defence agents check the documents (purchase papers, insurance, driver's license, etc.) of vehicles used by the harvesters and sellers. However, the majority of pickers-sellers do not have these documents. They are obliged to pay a fine imposed by the security and defence agents in order to pass the checkpoint. In addition, they have to pay a fine to rangers. In fact, since deforestation is prohibited, harvesters and sellers are obliged to pay a lump sum of CFA 500 francs for those who use motorcycles as means of transport and CFA 200 francs for those who go by bicycles.

In addition to the problems mentioned above, collectors-sellers are confronted with the problem of fodder conservation. Indeed, after two days of sale at the marketplace, fodder that has not been sold becomes dry (see photograph 9) or rotten (See photograph 10).



Photograph 9: Dried fodder



Photograph 10: Rotten fodder

October, 2022

On these pictures we can see dried and *rotten fabaceae*s. These plants are useless. They are thrown away in the bush on the outskirts of the city or go to the garbage dump. This waste is not only a huge loss<sup>4</sup> for the collectors and sellers but also an environmental problem.

## **2.2. Discussions**

### **2.2.1. Types of plant species sold in Daloa**

The results of this study have showed that the fodder species sold in the city of Daloa belong to two main families: *poaceae* and *fabaceae*. These fodder species are sold exclusively fresh, i.e. they are green fodder. They are *Ficus exasperata Vahl* and *Panicum maximum (jacq.)*.

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<sup>4</sup> According to the respondents, the losses vary between CFA 2,000 and 4,000 francs

The study also revealed that *Ficus exasperata Vahl* is the most sold and valued plant species in Daloa. This result is contrary to those of A. Dan Gomma, I. Chaibou, M.B. Anoin and E. Schlecht (2017, p.508) of F. A. Kouassi, F. Tra B.B. and J. K. Koffi, (2016, p.366), F. A. Kouassi, V. Majorein, J. Ipou Ipou, C. Y. Adou Yao (2010, p.82) and F. S. K. Kamanzi, S. Nacro, M. Ouedraogo, S. Ouedraogo, C. Kaboré-Zoungrana, 2010, p.490. These authors identify a diversity of plant species sold on markets and respectively divided into 14, 3, 29 and 7 botanical families. These species are sold in a fresh state (green) according to the first authors mentioned, which is consistent with our result. In addition to these plant species, agricultural by-products (groundnut and cowpea haulms, rice stalks and straw) are more marketed in cities in Sahelian countries (A. Dan Gomma, I. Chaibou, M.B. Anoin and E. Schlecht (2017, p.514). According to L. Ali, P. Van Den Bossche and E. Thys (2003, p.77), animals in urban and peri-urban areas receive cereal grains (millet and sorghum) and mineral and vitamin supplement (MVC) and concentrated feed of industrial origin (A. K. Fall et al., 2017, p.145). These agricultural by-products are not part of the livestock feed sold in our study area.

### ***2.2.2. Collection areas and means of transport***

The fodder species marketed in Daloa come from several areas: from the wild, the fields (fallow land), from the edges of the main roads, from housing estates, etc. The distance between the sale and collection sites varies between 2 and 30 km. These areas are identical. These findings are identical to those from F. A. Kouassi, F. Tra B.B. and J. K. Koffi, (2016, p.366) in the Abidjan district. On the other hand, the radius of exploitation is estimated to be between 15 and 65 km on ferralitic soils (plateau) and between 4 and 20 km on hydromorphic soils (lowlands) and sandy soils on the coast. As a result, the means of transport used by pickers and sellers are bicycles and motorbikes. In addition to these two devices used in Daloa, carts, and feet and are used as revealed by F. A. Kouassi, V. Majorein, J. Ipou Ipou, C. Y. Adou Yao (2010, p.80) and S. Maman (2014, p.18). Among these means of transport, according to these authors, carts are the most used in the transport of fodder to marketplaces in the districts of Abidjan.

### ***2.2.3. Fodder marketing***

#### ***2.2.3.1. Actors and marketing channels***

The majority of actors in this activity are male and illiterate. This finding is in line with those of S. Maman (2014, p.14) and F. A. Kouassi, F. Tra B.B. and J. K. Koffi, (2016, p.359). For S. Maman, the actors in this activity are mostly adults, 84.88% of whom are over 20 years

old. Similarly, F. A. Kouassi, F. Tra B.B. and J. K. Koffi attest that the age of actors varies between 30 and 35 years. These different authors are unanimous that these actors are not educated. On the other hand, F. A. Kouassi, F. Tra B.B. and J. K. Koffi, (2016, p.359) state that nationals (Ivoriens) are not interested in this activity, which is in contradiction with our results. Our surveys show that more than half (52.00%) of fodder collectors and sellers in Daloa are Ivoriens from the north of the country.

This study reveals two short channels: the direct channel which includes fixed picker-sellers and itinerant picker-sellers. These different channels are different from those of S. Maman (2014, pp.16-17). The latter identifies four channels in the marketing of fodder in Niamey: three of which are short (collectors and/or producers, wholesalers and resellers) and one of which is long and relies on two intermediaries between producers and consumers. These channels are organised in such a way that all actors have the latitude to obtain supplies from collectors and/or producers (collectors for grass and bush straw and producers for crop residues). There are also street vendors in the city of Niamey. These street vendors are camel riders and cart drivers. On their side, A.A. M. Lawal, M. Chaibou, I. Hamadou, A.S. Gouro (2019, p.47-48) note that fodder marketing channels in Niger are organised according to ethnic groups. Thus, Hausa people are considered as wholesalers/semi wholesalers, Zarma people as sellers/retailers and Fulani people as itinerant sellers.

### **2.2.3.2. Profitability of fodder marketing**

The results of our surveys show that the marketing of traditional poultry is a sufficiently profitable activity because the average monthly income of a picker-seller using a motorbike as means of transport is estimated at CFA 150,000 francs, and that of a bicycle is CFA 99,000 francs. The monthly income of motorbike users is much higher in the markets of Abidjan district (F. A. Kouassi, V. Majorein, J. Ipou Ipou, C. Y. Adou Yao (2010, p.81) and in Zongo market in Cotonou (A. B. Aboh, 1999, p.3.). The income is CFA 100,400 francs in periods of abundance of animals for those in the markets of Abidjan district and between CFA 23,250 francs and 38,250 francs for those in Zongo market, while the monthly income of those in Daloa is static.

## Conclusion

The survey has provided a better understanding of the fodder supply channel in the city of Daloa. It has revealed that two major families of natural herbaceous fodder are sold on the Daloa market: namely grasses (*Poaceae*) and legumes (*Fabaceae*). However, the most sold plant species is *Ficus exasperata Vahl*. The actors in this activity are men aged between 20 and 50. The trade is dominated by Ivorians of northern origin who are often illiterate. They exploit fodder species in the immediate, distant and deep rural peri-urban areas. These participants use motorbikes and bicycles to supply the city of Daloa with fodder. The supply channel comprises two main channels: the channel of fixed pickers-sellers and the channel of itinerant pickers-sellers. This activity is a real source of income and therefore a means to fight against poverty. However, with the uncontrolled urbanization and the development of urban livestock and the scarcity of plant species in the city, the study recommends the cultivation of fodder species.

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