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RESEARCH ARTICLE

ANALYSIS OF LIVESTOCK PRODUCTION PRACTICES IN THE NORTHERN REGION OF CÔTE D'IVOIRE

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ABSTRACT

The survey consisted of collecting information using a questionnaire. Sampling covered 442 farmers of which 42 were sampled in the department of Boundiali, 150 in Ferkessédougou, 58 in Gbon, 52 in Karakoro, 50 in Kasséré, 40 in Korhogo and 50 in Tioro. The study revealed that 99 % farmers are male. Only, 1 % of them have attended school of general education. Agriculture is the main activity in 87 % of cases. Four main types of cattle are owned; N'Dama, Baoulé, zebu, Méré. Méré cattle are in extension in the study area; these cattle are owned by 46.5 % of farmer. In 85 % of cases, respondents practiced crossbreeding mixing local breeds with sahelian zebu cattle. All the farmers estimated that the natural pastures used for animal feed are not good. Moreover, Problems related to feed (34 %), animal driving (11.5 %) conflicts (24 %) and animal diseases (28.5 %) have been underlined by farmers as major constraints they faced in their activities. However, 41 % of respondents felt that the incomes obtained from the sale of live animals are important.

INTRODUCTION

Like most developing countries, Côte d'Ivoire is a predominantly agricultural country. Agriculture employs two thirds of the workforce and contributes to 34 % to total GDP and for 66 % of export income. However, Côte d'Ivoire is deficient in animal protein. The country has long been wrongly or rightly considered as an unfavorable breeding territory. Therefore, farming remains a secondary economic activity with a contribution about 4.5 % of agricultural GDP and 2 % of total GDP. Nevertheless, it is an important activity that contributes to improving food security, diversification and increasing the income of farmers. However, a national livestock was formed in a few decades when the country had no pastoral tradition before independence. It was during the period of the great drought of the Sahel countries (Mali, Burkina Faso, Niger, etc.) in the 1970s, which severely depleted the stock of these countries and compromise livestock exports to the coastal countries Boundary, Côte d'Ivoire proclaimed in 1974, livestock as a priority sector (Yapi-Gnaoré, Centre National de Recherche Agronomique, Côte d'Ivoire, Personal communication). Côte d'Ivoire has in its animal genetic resources three local cattle breeds; N'Dama, Baoulé and Lagune. These breeds, well adapted to local tropical climate, are also resistant to many parasites and are Trypanotolerant (Sokouri *et al.*, 2007). Unfortunately their utility and their contributions to sustainable agriculture are still poorly recognized. This results in even the threat of extinction of the animal genetic resources (Sokouri *et al.*, 2007). Indeed, the small size of these local breeds is the pretext used by farmers to practice anarchical crossbreeding operations involving zebu breeds wich have a large format (Sokouri *et al.*, 2009). These farmers believe that such a practice can increase the yield of their farm and animals. Unfortunately, these intense crossbreeding practices are fear falling trypanotolerance. While the loss of such a biological specificity in a farming area heavily infested by tsetse flies causes a significant decline in livestock productivity, especially for farmers with small units (Hoste, 1992). So, smallholders have to be educated. However, it begins with the deepening of the knowledge of the characteristics of the production systems and management of animal genetic resources in general and cattle breeds in particular. This study aims to determine the socioeconomic characteristics of farmers

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and the characteristics of their farming practices in the northern Region of Côte d'Ivoire where 78.3 % of cattle population is concentrated.

MATERIALS AND METHODS

The study was conducted in seven (07) departments in the northern region of Côte d'Ivoire. The main agro-ecological characteristic of this region (Sudan region) is its climate Sudanese tropical, with a rainy season that lasts from April to October and an average rainfall of 859 mm per year. The dry season from November to March is under the influence of the Harmattan (Yapi-Gnaoré *et al*, 1996)

Sampling methods

Prospecting

The identification and location of farms were conducted in collaboration with the National Chamber of Agriculture and the Regional Directorate of National Agency for Rural Development. Then all farm sites identified and located were visited. The selection of these farms was essentially based on the availability of farmers to provide the information requested in a survey questionnaire. Thus, sampling covered 442 breeders of which 42 were sampled in Boundiali, 150 in Ferkéssédougou, 58 in Gbon, 52 in Karakoro, 50 in Kasséré, 40 in Korhogo and 50 in Tioro.

Questionnaire and survey methods

The collected data were obtained from a survey with a single pass. The survey consisted of collecting information using a questionnaire designed to obtain information that could be involved in the structuring and organization of farming systems. All information collected was divided into two major categories of data; data on zootechnical aspects and data on socio-economic aspects.

Zootechnical aspects

- Herd composition and breeding management of the different breeds;
- Management of animal health;
- Other animal species found on farms;
- Feed management taking into account aspects of the habitat, pasture status and management;

Socioeconomic aspects

- Social characteristics of farmers;
- Livestock products, their destination and importance of income from farming activities;
- Major constraints face by farmers.

Data analyses

All information obtained from the survey questionnaire allowed the construction of a data matrix consisting of 57 variables and 599 observations (farmers). A test for linear Pearson correlation was made between the number of cattle and the number of other types of farmed animals to determine the relationship between the cattle and other livestock. This analysis was performed with STATA 9.0. The frequencies of the different categories of qualitative variables were calculated by the method of descriptive statistics with EXCEL.

RESULTS

Social characteristics of breeders

Agriculture is the main activity of farmers (87 %) of the northern region of Côte d'Ivoire. These breeders are mostly male (99 %). It is only in the departments of Gbon (5 %) and Kasséré (6 %) women are present in this area of activity (Table 1). Only 7.3 % of farmers are under 30 years old, while 31.3 % of them aged between 30 and 45 years. The majority of farmers 61.4 % are over 45 years old. Most of breeders did not attend school, except for 5 % of them in the department of Gbon and 6 % in Kasséré who have attended secondary school of general education (Table 1). Farmers are polygamous for most (66 %). However, in the departments of Korhogo and Tioro monogamous farmers predominate; with percentages of 57 and 53, respectively. Unmarried farmers are met only in the department of Ferkéssédougou. However, they represent only 2 % of breeders surveyed (Table 1). Sénoufo is the dominant ethnic group of farmers (67 %), and then comes the Malinké ethnic group (17 %). But there are some farmers from Baoulé ethnic group, especially in the departments of Gbon (5.2 %), Karakoro (5.6 %) and Kasséré (6 %). Farmers from various other ethnic groups are also present in the northern region. They represent 14 % of respondents surveyed in this region. (Table 1).

Composition of herds

This study permitted to identify five types of cattle raised in the study area; local breeds (N'Dama Baoulé), zebu, Méré cattle which are animals derived from crossbreeding using zebu and local breeds (Baoulé cattle, particularly) mentioned by farmers and categorized as 'other cattle types'. In effect, they are animals for which farmers have not been able to give the name of the breed. The two local breeds experienced varied. While Baoulé cattle are raised in 24.5 % of farms, only 4.5 % of respondents reported owning N'Dama breeds. However Méré cattle are most commonly in 46.5 % of farms; especially in the departments of Ferké and Karakoro where farmers who own these animals represented 90.5 % and 79 %, respectively in the northern region (Table 2). Moreover, the survey also showed that cattle breeders have other species of livestock, including sheep, goats, pigs and poultry. However, the Pearson correlation test revealed that farmers in this region also make sheep breeding, in addition to cattle. Indeed, this test showed a significant positive correlation (0.23) between herd size (number of animals) of cattle and sheep (Table 3).

Herd management

Mode of acquisition of the initial core

In 68 % of cases purchase represents the mode of acquisition of the first animals for establishment of livestock in the

northern region of Côte d'Ivoire. However, the constitution herd of departure of the animals acquired by heritage represents 27 %. In the department of Kasséré, 76 % of respondents have inherited the initial core component husbandry. Only two percent of them got their first animals by donation. Furthermore, on average, three percent of farmers have refused to reveal how they acquired their first animals (Table 4).

Ownership

The mode of individual ownership is practiced mainly in the study area. Indeed, 51 % of farmers kept their herd individually. Community farming is practiced by 40 % of farmers. However, in the departments of Gbon, Kasséré and Tioro community faming is the most common practice with 53 %, 64 % and 58 % respectively (Table 4).

Animal habitat

Farmers keep their animals in parks in 96 % of cases. Animals are housed in enclosures designed with planks or bamboo or stakes connected by barbed wire, or other makeshift materials. These parks provide shelter against the beasts and probably against rain and sun when they are built in a shady spot. Housing with a minimum of amenities (park at night, chute, watering, etc.) to ensure good sanitary conditions are found primarily in suburban farms.

Reproductive management

In 85 % of cases, farmers cross local breeds (Baoulé and N'Dama) with Sahelian zebu breeds to reach their production targets (meat, milk). This practice is more common with high percentage in all the departments of study area. Furthermore, in 91 % of farms all males do not routinely involve in reproduction. Only a few bulls selected by farmers, are involved in reproduction. In 65 % of cases the breeding males are from others herds (Table 5).

Health monitoring

In 68 % of farms, animal health monitoring is provided by a private veterinarian agent who regularly visits the herd. It provides medical assistance and advises farmers on medical prophylaxis, giving him the basics needed to easily and quickly detect an animal that is not healthy. However, farmers who have never worked with a veterinarian agent represent 27 %. Vaccination which is an important component of medical prophylaxis is regularly performed in 85 % of farms. Furthermore, mixed deworming (internal and external) is practiced by the majority of farmers, 81 %.

Animal Feeding

All the Farmers use mainly natural pasture as basic food for their animals. In 29 % of farms, in addition to grass, woody forage is also used to feed animals. In most cases, farmers are procured woody forage on the market. Moreover, it develops a business increasingly organized and important to this type of crop around areas with high livestock density. Farmers also supply from natural savanna near and far from their farm. Woody forages are generally intended for small ruminants (sheep and goats). Therefore, this type of feed is used primarily by farmers who own sheep. A food supplement is given to animals in 95 % of cases. This supplementation is provided with a variety of products depending on their availability and their costs in the markets. Therefore, farmers use cottonseed, cotton waste and peelings cassava or yam. The intake of minerals is usually provided with the Salt Lick. Animal watering is usually from three sources: dams (64 %), river (30 %), and 6 % for various other sources (Table 7).

State and management of natural pastures

All farmers of the study area estimated that the natural pastures used for animal feed are not good. Indeed, 49 % of them estimated that natural pastures are acceptable and 51 % thought these pastures are in advanced state of degradation. However, 59 % of farmers refused to grow grass, although they are exposed to the scarcity of good quality pasture (Table 8). Grazing animals are left free. This practice is more common in all the farms of the study area; 99 % of farmers on average (Tableau 8). Therefore, stalling is not formed in this region. Indeed, farmers believe that this system of pasture management requires considerable financial resources. Furthermore, Farmers do not seem to see the need for the protection and preservation of pastures. Only 34.67 % of farmers are interested in various actions against bushfires, although all respondents claimed that pasture degradation is more pronounced region. Control methods practiced by these farmers are numerous and diverse. However, three methods are the most common: (i) implementation of firewall around the mining sites during the dry season, (ii) establishment of early fires and (iii) establishment of a guarding system. These farmers indicated that they are also involved in campaigns to protect the environment in general and the fight against bush fires in particular.

Farm production

In the study area, there are no farmers, who produce milk only. Meat production is the main type of livestock production found in this area (63 %). With regard to meat production, the majority of farmers produced animals for slaughter and breeding. Farmers who practice the mixed system (meat and milk production) represent 37 % (Table 9). Furthermore, for 43 % of farmers the destination of animals produced is sale only. For milk production, 51 % of farmer did not indicate the destination of the products. Moreover, less than half of the farmers (41 %) felt that the incomes obtained from the sale of live animals are important. In 20 % of cases they estimate that these incomes are middle, while, 39 of farmers thought that the incomes are low (Table 9).

Major constraints faced by farmers

Difficulties related to animal grazing represent the major constraints according 34 % of farmers. Moreover, animal diseases with a proportion of 28.5 % of respondents and social conflicts with 20.5 % of respondents are the two others main constraints to livestock development, indicated by farmers. Furthermore, 11.5 % of farmers estimate that animal driving is a real difficulty that they face always (Table 10).

Table 1. Distribution of farmers (%) according to the social characteristics of breeders

Caractéristiques	Départements							Moyenne (n=442)
	Boun (n=42)	Ferké (n=150)	Gbon (n=58)	Kara (n=52)	Kas (n=50)	Korh (40)	Tioro (n=50)	
Sex								
Male	100	100	95	100	94	100	100	99
Female	0	0	5	0	6	0	0	1
Age (year)								
< 30	21,5	6	10,5	5,5	0	14,4	0	7,3
30≤ âge< 45	21,5	27,4	31,5	39	41	28,6	35	31,3
≥ 45	57	66,6	58	55,5	59	57	65	61,4
Level of education								
illiterate	100	100	95	100	94	100	100	99
School *	0	0	5	0	6	0	0	1
marital status								
monogamous	36	35	21	0	27,4	57	53	33
Polygamous	64	63	79	100	72,6	43	47	66
Unmarried	0	2	0	0	0	0	0	1
Ethnic group								
Baoulé	0	0	5,2	5,6	6	0	0	2
Sénoufo/Tagbana	43	61	47,4	94,4	65	86	82,4	67
Malinké	35,6	8	47,4	0	23	7	17,6	17
others	21,4	31	0	0	6	7	0	14
Main activities								
Agriculture	64	90	79	100	94	86	82,4	87
Other activities	36	10	21	0	6	14	17,6	13

Boun=Boundiali; Ferké = Ferkessédougou ; Kara = Karakoro, Kas = Kasséré ; Korh = Korhogo
n: number of farmers interviewed
** Secondary school*

Table 2. Distribution of farmers (%) depending on the type of cattle raised

Breeds	Départements							Overall ((n=442)
	Boun (n=42)	Ferké (n=150)	Gbon (n=58)	Kara (n=52)	Kas (n=50)	Korh (40)	Tioro (n=50)	
Baoulé	0	5	69	5.5	69.5	21	2	24.5
N'Dama	8	1	2	8.5	2	10	2	4.5
Zébu	27	2	5	5	12	2	6	8,5
Méré	58	90.5	10.5	79	12	57	17	46.5
Autres	7	1.5	13.5	2	4.5	10	73	16

Boun=Boundiali ; Ferké = Ferkessédougou ; Kara = Karakoro, Kas = Kasséré ; Korh = Korhogo
n: number of farmers interviewed

Table 3. Correlation coefficients between number of cattle and other species of livestock

	Cattle	Sheep	Goat	Pig	Poultry
Cattle	1				
Sheep	0.43*	1			
Goat	0.12	0.38*	1		
Pig	-0.03	0.12	0.13	1	
Poultry	0.004	0.22*	0.49*	0.11	1

** Correlation is significant at alpha = 0.05*

Table 4. Distribution of farmers (%) depending on the mode of acquisition of the first animals, property types and animal housing

Characteristics	Departments							Overall (n=442)
	Boun (n=42)	Ferké (n=150)	Gbon (n=58)	Kara (n=52)	Kass (n=50)	Korh (40)	Tioro (n=50)	
First animals*								
Purchase	79	65	85	83	24	85	64	68
Heritage	14	27	15	11	76	15	30	27
Bail	0	0	0	0	0	0	0	0
Donation	0	4	0	6	0	0	0	2
No response	7	4	0	0	0	0	6	3
Ownship								
Individual	79	47	47	67	36	57.5	42	51
Community	14	31	53	27	64	42.5	58	40
No response	7	22	0	6	0	0	0	9
Animal habitat								
Out on pasture	0	2	5	0	0	0	0	1
Park	93	98	95	100	100	100	82	96
Family court	7	0	0	0	0	0	18	3

Boun=Boundiali ; Ferké = Ferkessédougou ; Kara = Karakoro, Kas = Kasséré ; Korh = Korhogo
n: number of farmers surveyed
** mode of acquisition of first animals*

Table 5. Distribution of farmers (%) depending on the mode of reproduction management

Characteristics	Departments							Overall (n=442)
	Boun (n=42)	Ferké (n=150)	Gbon (n=58)	Kara (n=52)	Kass (n=50)	Korh (40)	Tioro (n=50)	
Use of males*								
Yes	93	94	95	100	94	100	53	91
No	7	6	5	0	6	0	47	9
Origin**								
Within***	71.4	74.5	74	39	29.4	100	59	65
Outside***	28.6	25.5	26	61	70.6	0	41	35
Crossbreeding								
Yes	78.6	98	95	94.4	88	64	47	85
No	21.4	2	5	5.6	12	36	53	15

Boun=Boundiali ; Ferké = Ferkessédougou ; Kara = Karakoro, Kas = Kasséré ; Korh = Korhogo
n: number of farmers surveyed
** Use of reproductive males; ** Origin of these reproductive males; *** Within the herd; Outside the herd*

Table 6. Distribution of farmers (%) based on animal health monitoring

Parameters	Departments							Overall (n=442)
	Boun (n=42)	Ferké (n=150)	Gbon (n=58)	Kara (n=52)	Kass (n=50)	Korh (40)	Tioro (n=50)	
Deworming								
Internal	0	2	0	33	0	0	29	8
External	0	2	0	6	0	7	0	2
Mixed	100	96	89.5	61	94	93	6	81
No*	0	0	10.5	0	6	0	65	9
vaccination								
Yes	100	92	95	72	94	64	65	85
No	0	8	5	28	6	34	35	15
Vet assist**								
Often	93	49	63	100	70.6	79	65	68
Rarely	0	45	21	0	29.4	14	35	27
Never	7	6	16	0	0	7	0	5

Boun=Boundiali ; Ferké = Ferkessédougou ; Kara = Karakoro, Kas = Kasséré ; Korh = Korhogo
n: number of farmers surveyed
** No deworming*
*** Veterinary assistance*

Table 7. Distribution of farmers (%) based on animal feed system

Characteristics	Departments							Overall (n=442)
	Boun (n=42)	Ferké (n=150)	Gbon (n=58)	Kara (n=52)	Kass (n=50)	Korh (40)	Tioro (n=50)	
Basic food								
Natural pasture	100	100	100	100	100	100	100	100
Artificial pasture	0	0	0	0	0	0	0	0
Complémentation								
yes	93	98	100	100	70.6	100	100	95
No	7	2	0	0	29.4	0	0	5
Woody forage								
Yes	0	55	0	11	6	0	76.5	29
No	100	45	100	89	94	100	23.5	71
Watering source								
Dam	64	92	53	39	35	36	70.6	64
River	29	2	42	61	53	50	29.4	30
Others	7	6	5	0	12	14	0	6
Position*								
Near	64	70.6	47	72	82.4	93	88	73
Far from farm	36	29.4	53	28	17.6	7	12	27

Boun=Boundiali ; Ferké = Ferkessédougou ; Kara = Karakoro, Kas = Kasséré ; Korh = Korhogo
n: number of farmers surveyed
** Position of watering source*

Table 8. Distribution of farmers (%) depending on state systems and grazing management

Characteristics	Departments							Overall (n=442)
	Boun (n=42)	Ferké (n=150)	Gbon (n=58)	Kara (n=52)	Kass (n=50)	Korh (40)	Tioro (n=50)	
State of pasture								
Good	0	0	0	0	0	0	0	0
Acceptable	57	25.5	21	94.4	0	100	100	49
Degradation	43	74.5	79	5.6	100	0	0	51
Artificial pasture*								
Oui	7	6	5	0	12	7	0	5
Non	93	94	95	100	88	93	100	95
Willingness to grow grass								
Yes	36	63	52.6	11	47	21.4	6	41
No	64	37	47.4	89	53	78.6	94	59
Grazing management								
Stabulation**	0	0	0	0	0	0	0	0
Pâture continue	100	98	100	100	100	100	100	99
Pâture en rotation	0	2	0	0	0	0	0	1

Boun=Boundiali ; Ferké = Ferkessédougou ; Kara = Karakoro, Kas = Kasséré ; Korh = Korhogo
n: number of farmers surveyed
** Existence of natural pasture*
*** Animals do not come out, they are in a stable, and the food is brought to them constantly*

Table 9. Distribution of farmers (%) according to the production characteristics

Characteristics	Departments							Overall (n=150)
	Boun (n=14)	Ferké (n=51)	Gbon (n=19)	Kara (n=18)	Kass (n=17)	Korh (14)	Tioro (n=17)	
Production								
Meat	86	63	100	5.6	6	93	100	63
Meat and milk	14	37	0	94.4	94	7	0	37
Destination of animals								
Consumption	0	0	0	6	6	0	0	1.5
Sale	71	51	31	27	12	7,5	88	43
Sale + Consump	29	33	69	6	0	82.5	12	33.5
Donation	0	16	0	61	81	0	0	22
Destination of milk								
Consumption	0	0	0	0	12	0	0	1.5
Sale	7	4	0	44	0	7.5	0	8
Sale + Consumption	7	47	16	50	88	0	0	34
Donation	0	14	5	0	0	0	0	5.5
No response	86	35	79	6	0	82.5	100	51
Revenue of farmers								
Important	21.4	45	10.5	94.4	29	43	29.4	41
Middle	28.6	23.5	63	0	12	0	0	20
Low	50	31.5	26.5	5.6	59	57	70.6	39

Boun=Boundiali ; Ferké = Ferkessédougou ; Kara = Karakoro, Kas = Kasséré ; Korh = Korhogo
n: number of farmers surveyed

Table 10. Distribution of farmers according to the difficulties of their business

Constraints	Départements							Overall (n=442)
	Boundiali (n=42)	Ferké (n=150)	Gbon (n=58)	Karakoro (n=52)	Kasséré (n=50)	Korhogo (40)	Tioro (n=50)	
Feed	7	49	21	27	6	57.5	42	34
Animal driving	28.6	8	10	17	18	0	6	11.5
Conflicts	50	10	48	33	0	7.5	46	24
Diseases	0	31	21	23	76	35	6	28.5
Others*	14.4	2	0	0	0	0	0	2

n: number of farmers surveyed

DISCUSSION

This study showed that Cattle breeding is an activity largely limited to men, to the extent that the owners of farms are male in 99 % of cases. While Verbeek *et al.* (2007) who worked on socio-economic aspects of small ruminants breeding in Kenya, found that Animals were in most cases owned by the household head only or by both the household head and the spouse. Furthermore, the result obtained in the northern region of Côte d'Ivoire masks the important role that women play in related activities in the production systems of these cattle farms. On the one hand, women are predominant in the production of cereals (rice, maize, sorghum, millet), the residues and / or derivatives are used for cattle feed. On the other hand, they are a important link in the system of milk marketing.

Méré cattle considered as hybrid between zebu cattle and Baoulé cattle is being in extension in the study area. These animals are bred by 46.5 % of farmers interviewed. Moreover, Méré cattle occupies a prominent place in livestock systems because this type of cattle is much sought by farmers for two main reasons: (i) improvement of meat production and (ii) animal traction. Thus, Farmers exercise their rights to choose and prefer genotypes that can bring them added value (Kamuanga *et al.*, 1999). Farmers seem to pay very little interest in N'Dama cattle which is a local trypanotolerant breed. In effect, respondents who own N'Dama Breed represent 4.5 % of farmers interviewed. Such a situation presents a real threat for this breed which appears to be abandoned by farmers. N'Dama situation in the study area seems to contradict the results of previous studies (Shaw and Hoste, 1987, ILCA, 1992a) that reported increased expansion of N'Dama cattle both within and outside farms of origin. In addition, MacHugh (1996) reported that N'Dama cattle is recognized worldwide as a valuable genetic resource. There is currently an interest for N'Dama use as a way introduction and development of livestock in other parts of Africa infested by tsetse flies.

Baoule cattle has better condition compared to that of N'Dama. This breed is owned by 24 % of farmers interviewed. However, it is not less threatened. Indeed, farmers who own this breed are fewer than those who own Méré cattle. Cattle that have been classified 'other cattle' could represent different types of cross, taking into account the results of phenotypic characterization achieved in the departments of Bouaké and Korhogo. This characterization has identified a phenotypic type composed of animals from different crosses which farmers ignore parenting and were categorized as ''Métis'' (Sokouri *et al.*, 2007). Generally, farmers perform crossbreeding operations between local taurine breeds and zebu cattle in order to obtain animals that answer their needs. This practice is very common in the northern region of Côte d'Ivoire where 85 % of farms were affected crossing operation. Farmers in this region use a lot reproductive males that they usually pick themselves within zebu herds. This study showed that cattle breeders have other species of livestock, including sheep, goats, pigs and poultry. This result suggests that maintaining diversity is a concern for farmers in the Northern region of Côte d'Ivoire. Moreover, the Pearson

correlation test revealed that cattle breeding and sheep breeding are complementary activities. This is answered in economic terms. This result highlights the position of substitute occupied by sheep when it comes to generating revenue to solve urgent problems of livelihood. These animals have a reproductive cycle and shorter development and they are easier to sell on the market. These results were also obtained by Hella *et al.* (2001) who found that sheep and / or goats are substitutes when farmers have to sell cattle to generate income. Generally, animals are taken to pasture early in the morning to come back in the afternoon, after an average grazing time of 8:00. There are also cases where the animals 'spend the night' on pasture. In this case, they are conducted in the evening to return to the park the next morning.

However, all farmers interviewed have noted that the degraded pasture condition forces them to practice what they call "small transhumance." They defined "small transhumance" as a temporary move (from one to two weeks) of farmers and/or herdsmen with their animals to better grazing areas that are far from their farms. Indeed, during the dry season, the question of animal feed becomes very crucial, because it is difficult for farmers to find good quality grass in sufficient quantity for their animals. In addition, they face stiff competition that imposes by transhumant zebu from neighboring sahelian countries, also searching better pastures. Thus, the difficulties related to weather conditions, there are those associated with a high density of animals on pasture with increased sahelian transhumant animals during this period involved. This contributes to greatly degrade pastures. This observation confirms that of Holtland, (1994) who believes that the severe pasture degradation is caused by overgrazing of animals. Therefore, he suggests that farmers decrease the density of animals on pasture deliberately or forcibly and are encouraged to practice the barn. Also, encouraging farmers to grow pasture could be a worthy alternative.

Localities where milk production is important are those whose farms using mostly zebu and Méré cattle. This suggests that milk production in Méré is significantly higher than that of local breeds. Therefore, crossing between local breeds and zebu bull would not only ensure the improvement of labor and meat production. These crossing also improve milk production even if it does not seem to be the main objective of farmers. In 41 % of cases farmers estimated that income derived from sales of their products are important, 20 % of farmers indicated that these income are middle. However, for 39 % of respondents revenues derived from the sale of farm products are low. This can have three levels of explanation. The first level of explanation is the low productivity of livestock because of the low productivity of animals owned unit. The second is the refusal of these farmers to dump their less productive animals for social and cultural reasons. Indeed, many observers have linked the desire to own a large livestock breeders and prestige (Sconnes *et al.*, 1999). The third level of explanation is the lack of control by farmers marketing channels for livestock products. Several studies have also reported resistance from some farmers to get rid of animals for reasons of prestige (Cossins *et al.*, 1996), or to stabilize the food security of the family during times when crops fail (Hella *et al.*, 1999), or by lack of information on livestock markets (Ashimogo *et al.*, 1998). An equally important reason is the fact that farmers have no right to milk produced by their animals, which remains the exclusive own of herdsman. In fact, in the contract that the herdsman signs with farmer, he generally requires that milk be part of his salary. So he has milk as he wants at the expense of animals and farmer. Problems related to feed (34 %), animal driving (11.5 %) and (24 %) have been underlined by farmers as major constraints they faced in their activities. In fact, these three constraints are linked. Indeed, farmers are finding it increasingly difficult to find good grass to feed their animals, given the pronounced degradation of pastures. Besides the problem of grass, farmers also face many difficulties to source agricultural residues and agro-industrial products. In fact, the costs becoming higher make them inaccessible.

Therefore, the search for good pasture by farmers will expose another difficulty; that of animals driving. The scarcity of good grass in the study area often forces them to drive their animals on land that is very far from their base. Thus, these farmers with their animals roam land that is unknown to them and generally fall on landowners who are not pleased with their presence. This usually leads to conflicts. Social conflicts are of several types. The type most experienced is conflict between pastoralists and farmers. The search for good grass often leads the animals of plots where they destroy crops, usually without the knowledge of herdsman. The farmer pays dearly this kind of damage done by his animals. This highlights the importance and the need for farmers to have cultivated pastures on their farms to prevent recurring conflicts between them and farmers. Another type of conflict is that between landowners to farmers to whom they are related by either a lease or a contract of sale. The owners generally make use of eviction threats to get money or animals to farmers

Conclusion

This study showed that in the northern region of Côte d'Ivoire, cattle's breeding is an activity exclusively limited to men, to the extent that the owners of farms are male in 99 % of cases. These farmers are mostly illiterate (99 %) and agriculture is their main activity (87 %). Moreover, the survey also showed that cattle breeders have other species of livestock, including sheep, goats, pigs and poultry. However, cattle breeding and sheep breeding are complementary activities. Méré cattle are being in extension in the study area, 46.5 % of farmed owned this type of cattle. While, N'Dama breed seems to be abandoned by farmers; only 4.5 % of them owned this breed. Indeed, livestock management is characterized by intense crossing operations between local taurine breeds (Baoulé and N'Dama) with zebu cattle; 85 % of respondents practiced crossbreeding. Thus, zebu influence is significant in farms of this region. Furthermore, the majority of respondents do not want to grow pasture, although natural pastures are in advanced state of degradation.

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