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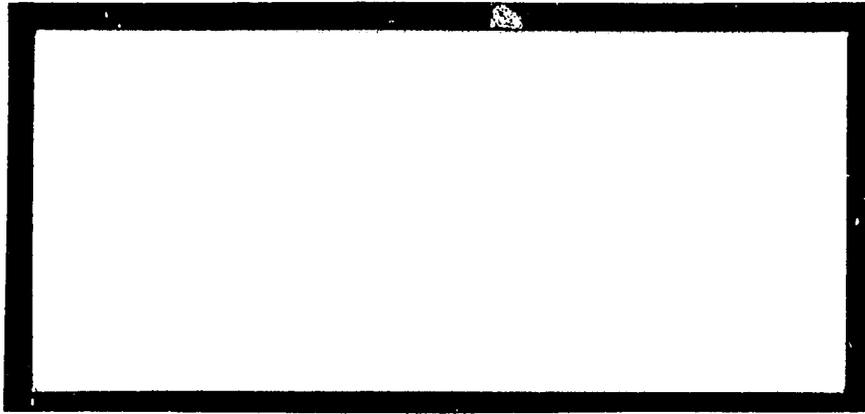
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PROMOTING CATTLE FATTENING
AMONGST PEASANTS IN NIGER

by

Christopher Wardle

Working Paper # 2

LIVESTOCK PRODUCTION AND MARKETING
IN THE ENTENTE STATES OF WEST AFRICA

USAID CONTRACT # AID/afr-c-1169

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FORWARD

This working paper was written as part of a three-year study of West African livestock economics undertaken by the Center for Research on Economic Development, University of Michigan, for the United States Agency for International Development under Contract AID/afr-c-1169. The study consisted of four eighteen-month field studies, two focusing on production and two on marketing, in addition to several investigations based on the existing data and literature. The geographic area of focus essentially involved the five member states of the Conseil de l'Entente, Ivory Coast, Togo, Benin, Niger, and Upper Volta, but also included, in a more general fashion, Mali and Nigeria. The following documents have been produced as a result of this study:

- K. Shapiro, ed., Livestock Production and Marketing in the Entente States of West Africa: Summary Report. (This volume contains an overview by Shapiro plus separate summaries of each author's monograph.)
- A. Ergas, ed., Livestock Production and Marketing in the Entente States of West Africa: Annotated Bibliography. (Included as part of the summary report.)

MONOGRAPHS:

- Delgado, C., Livestock versus Foodgrain Production in Southeastern Upper Volta: A Resource Allocation Analysis.
- Staatz, J., The Economics of Cattle and Meat Marketing in Ivory Coast.
- Eddy, E., Labor and Land Use on Mixed Farms in the Pastoral Zone of Niger.
- Herman, L., The Livestock and Meat Marketing System in Upper Volta: An Evaluation of Economic Efficiency.

WORKING PAPERS:

1. Ferguson, D., A Conceptual Framework for the Evaluation of Livestock Production Development Projects and Programs in Sub-Saharan West Africa.
2. Wardle, C., Promoting Cattle Fattening Amongst Peasants in Niger.
3. Swift, J., West African Pastoral Production Systems.
4. Sleeper, J., An Economic Analysis of the Role of Ox-Plowing and Cattle-Feeding in the Stratification of West African Livestock Production.
5. DeBoer, A. J., The Short Run and Long Run Position of Australian Beef Supplies and the Competitiveness of Australian Beef in International Trade.
6. Porter, R., The Uses of Economic Models in Analysis of the Cattle Sector.

These documents are available from the United States Agency for International Development, Bureau for Africa, Office of Development Resources (AFR/DR), New State Department Building, Washington, D.C. Some may be available from the Center for Research on Economic Development. The monographs and the summary report are also available in French.

Ann Arbor, Michigan
February, 1979

Kenneth Shapiro
Project Director

TABLE OF CONTENTS

1.	INTRODUCTION	page 1
2.	BACKGROUND ON NIGER	1
3.	THE LIVESTOCK SECTOR	2
4.	FATTENING CATTLE IN NIGER	4
5.	THE LIBORE PROJECT: ORIGINS	5
6.	RESULTS OBTAINED	6
6.1	INITIAL CONTACT	7
6.2	SELECTING THE PARTICIPANTS	8
6.3	DISTRIBUTING THE LOANS	9
6.4	PURCHASING THE CATTLE	10
6.4.1	Markets Frequented	10
6.4.2	Initial Control	11
6.4.3	Prices Paid	11
6.4.4	Size of Animals Bought	12
6.4.5	Age and Race	12
6.5	THE FATTENING PERIOD	14
6.5.1	Forage and Feedstuffs Utilized	14
6.5.2	Follow-up	15
6.5.3	Weight Gains	15
6.6	SELLING	17
6.6.1	Markets for Selling	18
6.6.2	Prices Paid	18
6.7	PROFITS REALIZED	20
6.7.1	Factors Influencing Profit Levels	21
6.7.2	Profitability of Cattle Fattening Compared with Compared with Other Activities	23
6.7.3	How Profits Were Spent	24
6.8	REPAYMENT OF LOANS	24
6.9	TAKING OUT A NEW LOAN	26
6.10	CHANGES IN THOSE PARTICIPATING	28
6.11	RELATED ACTIVITIES	28
6.11.1	Improving the Availability and Quality of Forage	28
6.11.2	Improving the Availability and Quality of Feedstuffs	30
7.	PROBLEMS ENCOUNTERED	30
7.1	SELECTION OF PARTICIPANTS	31
7.2	PURCHASE OF CATTLE	31
7.3	DURING THE FATTENING PERIOD	32
7.4	SELLING	33
7.5	NON-RESPECT OF THE CONTRACT	34
8.	SOCIAL IMPLICATIONS	35
9.	FUTURE PLANS	36
10.	CONCLUSION	37
10.1	VALIDITY OF PROMOTING CATTLE FATTENING BY PEASANTS	37
10.2	THE USE OF CREDIT	38
10.3	LOCATION AND TIMING	39
10.4	ORGANISING PEASANTS	40
10.5	MARKETING	40
	BIBLIOGRAPHY	42

1) INTRODUCTION

In the early 1970s, world attention focussed for the first time on a hitherto obscure part of the world, the Sahel. Failure of the rains between 1968 and 1972 resulted in widespread drought in many West African nations. This was certainly not the first time this century that the rains had failed for several consecutive years. However, the convergence of several different factors, many of them with roots embedded in the not-too-distant past, exacerbated the impact of this latest drought. Crops failed, herds were decimated and people starved. In time, international relief and aid was forthcoming.

In the aftermath of the drought, many Sahelian nations have taken steps which they feel will lessen their vulnerability to fluctuations in rainfall. One such step is to improve the management and exploitation of already existing food resources. In the Sahel, livestock represent one of the potentially most important food resources. Ironically, the mismanagement or rather lack of management of this resource in the past probably contributed, through overstocking and overgrazing, to the severity of the recent drought.

This paper looks at the attempts of one nation, Niger, to improve the management and productivity of its livestock sector. More specifically, it concentrates on one activity, cattle fattening, and the experience of one project designed to encourage peasants to fatten cattle. Before describing the project, a few words of introduction about Niger itself might be useful.

2) BACKGROUND ON NIGER

Niger is a large (1,267,000 square kilometres) land-locked country bordered to the north by Algeria and Libya, to the east by Chad, to the south by Nigeria and Benin and to the west by Upper Volta and Mali. The shortest link from the capital, Niamey, to the nearest seaport, Cotonou in Benin, is a still partly dirt road 1,035 km long. This gives an idea of just how isolated Niger is.

Despite her size, Niger is sparsely populated. In 1974, the population was estimated to be 4.4 million and growing at an average yearly rate of 2.7 percent (1). The population is made up of two groups, the nomads and the sedentary people. The former represent only 15 percent of the population yet keep an estimated 40 percent of the nation's livestock (1). The latter are preoccupied primarily with agricultural activities, growing the basic food crop, millet, as well as some cash crops such as peanuts, cotton and sesame.

Using precipitation as a criteria, the country can be divided latitudinally into at least three zones (2). To the north lies the Sahara desert, which covers 60 percent of the nation, and where rainfall is negligible. South of the Sahara runs a long strip which varies from 250 to 350 km in width and is called the Sahelian zone. Here rainfall averages between 250 and 450 mm a year, sufficient to support pasture. Consequently, much of the nation's livestock is found in this zone. Finally, in the extreme south is the Sudan-Sahelian zone where rainfall averages 550 to 750 mm a year, enough to grow some food and cash crops. Unfortunately, this last zone covers a mere 10 percent of the country (3), (4).

Given its physical location, climate, and until recently, lack of exploitable mineral resources, it is hardly surprising to find Niger ranked as one of the poorest nations in the world. In 1974, per capita GDP was estimated to be ninety-three dollars (5). Traditionally, Niger's sources of wealth have been agriculture and livestock. In recent years however, the discovery and exploitation of uranium reserves has considerably altered the picture. By 1974, uranium exports accounted for 50 percent of the nation's foreign exchange earnings (1).

3) THE LIVESTOCK SECTOR

The following figures indicate the importance of the livestock sector in Niger. In 1974, this sector contributed an estimated 11 percent of the nation's GDP and accounted for 22 percent of export earnings. Approximately 20 percent of the population depend on livestock activities for their livelihood (1).

Despite its importance, the productivity of the livestock sector is

relatively low compared with Europe or the US. For example, in 1971 the average offtake rate for the nation's cattle herd was estimated at 12.5 percent, compared with 20-25 percent for European countries (6). Average annual production of meat was estimated at fourteen kgs. per animal, compared with 60-80 kg in Europe (3).

Several factors explain this disparity. The first is historical. According to Sani, in colonial times the French largely ignored the livestock sector and instead concentrated on the production of cash crops such as peanuts which were needed (in this case to make cooking oil) by France (3). The second is environmental. With its harsh climate, both the quantity and quality of forage resources are limited for much of the year. Malnourished animals, especially the young, are particularly prone to diseases. The third is socio-cultural. The Fulani, who keep much of the nation's livestock, do not regard the exploitation of their herds in the same light as, say, most European or American farmers. Optimizing production is not a major goal. Herd size is considered to be a sign of social prestige, and capital accumulation together with risk aversion are seen as more important than maximizing revenue (7). Consequently, they only sell cattle when they absolutely have to. What is more, most of the nomads see their cattle primarily as a source of milk rather than meat (4).

The impact of the recent drought on the nation's livestock sector was severe. The number of cattle was nearly halved, from 4.2 million in 1972 to 2.2 million in 1974 (8). Not surprisingly, the preoccupation of the Niger government today is to rebuild the decimated herds. Significantly though, the recent three-year plan (1977-1980) also reveals a growing resolve to find ways of improving the management and increase the productivity of the existing livestock herd (9).

One suggestion which has been voiced from several different quarters is that the activities of the livestock sector be split up on a zonal basis (10). The specialised activities of each zone would be dictated by the environmental constraints imposed by that zone. Thus, the nation's breeding herds would be kept under extensive conditions in the north. Young males would be regularly culled and moved to ranches farther south. Finally, once mature, these animals would be moved down to the agricultural zone and finished using byproducts from cropping operations. The obvious

drawback to this seemingly sensible proposition is that it might be implemented without taking into sufficient consideration the most important resource of all, people; especially the nomads.

4) FATTENING CATTLE IN NIGER

Fattening represents the last link in the chain of animal production. In a semi-arid country like Niger, fattening basically serves two purposes. First, and probably most important, it enables weight gained by animals during the rainy season, when forage is abundant, to be conserved on the hoof. Cattle left in the large extensive herds lose much of this weight during the long dry season. Second, it enables the weight already gained during the rainy season to be further added to, thereby increasing the amount of meat produced by a given animal.

There are primarily two ways of promoting cattle fattening. One is to finance commercial feedlots, the other is to encourage peasants to start fattening cattle themselves. In a country like Niger, where the vast majority of the population (96 percent [4]) is rural, and where capital for large scale ventures is scarce, the second option is the logical choice.

Cattle fattening by peasants benefits not only the peasants involved, but also the nation as a whole. For the peasants, this activity provides them with employment during the dry season, which is the slackest time of the year. It supplements income, thereby encouraging peasants to stay on the land rather than migrate to urban centres where jobs are few. Fattening also enables peasants to utilise byproducts such as millet and rice bran from their cropping operations. Finally, it provides a steady source of manure, which can be used to improve the fertility of often inherently poor soils, thereby increasing crop yields.

For the nation as a whole, cattle fattening increases the overall production of meat and tends to increase the productivity of the livestock sector. The increased production may either be consumed domestically and/or exported. If the former is the case, then increased meat consumption would tend to improve the nutritional well-being of a people who, on average, consumed only ten kg. of meat in 1974 (1), (8), and whose sources

of vegetable protein are not very well balanced. If the latter is the case, then increased exports would boost foreign exchange earnings, thereby helping to relieve what until recently has been a chronic balance of payments deficit and possibly loosening foreign aid ties as well as increasing government revenue from export taxes.

5) THE LIBORE PROJECT: ORIGINS

The potential for fattening cattle in Niger began to be recognised by planners in the late sixties and early seventies (11); this despite the fact that the practice of fattening cattle had already spread to Niger from northern Nigeria some fifteen years earlier (12). Eventually, cattle fattening components were included in two large integrated development projects. Unfortunately, neither project has to date produced carefully documented reports which would be of use when planning other projects aimed at promoting cattle fattening in Niger.

In 1974, the Liboré cattle fattening project was drawn up by the Livestock Department at the Ministry of Rural Economy. The project itself was to be relatively small, limiting its activities to one Canton (the smallest existing administrative area, roughly equivalent to a county in the US). Population in the Canton was estimated at 8,275 in 1974 and was comprised primarily sedentary peasants belonging to the Djerma ethnic group (13).

There were several sound reasons for promoting cattle fattening in this locality. For a start, Liboré is situated a mere fifteen km from Niamey (the capitol of Niger), a major center of consumption. Niamey possesses the only slaughterhouse in the country with cold storage facilities. The proximity of the Niger river, which flows along one edge of the Canton, assures an important source of forage, a river grass called borgou (*echinnola stagina*) for at least part of the dry season. The presence of a 250-ha rice irrigation scheme in the Canton also guarantees a potentially important supply of byproducts utilisable for cattle feed. Finally, a small number of peasants in this region have already been fattening cattle for sale for a dozen years (13).

Earlier investigations revealed that the major constraint facing peasants

peasants wishing to fatten cattle was lack of capital (11). Consequently, the prime objective of the project was to set up a rolling fund from which peasants could borrow to finance the purchase of cattle. Several subsidiary rolling funds enabling peasants to purchase equipment, such as boats for harvesting the borgou in the river, were also created. The necessary infrastructure, including corral and weighing scales, was to be installed by the project, while the overall implementation would be assured by a team of four.

In 1975, Euro Action Accord, a consortium of non-governmental organisations, most of them European but some Canadian, agreed to fund the project for three years and provide an expatriate technical assistant to help set up and advise the project. Control of the project was to rest in the hands of the Livestock Department of the Ministry of Rural Economy which was also to provide a Nigerian director for the project.

6) RESULTS OBTAINED

Before discussing the results of the project, a few words of caution are necessary. Emphasis has of necessity been on implementing the project; thus, monitoring activities have had to take second place. As a consequence, the data gathered are not as detailed as that which could be expected from a purely research oriented project. Nevertheless, the results from the analysis of the collected data do offer insights into problems encountered when implementing a project out in the field.

Peasants in most parts of the world are suspicious of strangers poking around and asking questions. The peasants of Liboré are no exception, though in time a rapport has been built up and their confidence gained. The peasants recognise that the project is directed at them and has their interests foremost in mind. Of course, this is not to imply that the data collected is entirely error-free; nevertheless, the growing rapport, together with the practice of repeating sensitive questions after a period of time and then comparing the responses (for example, peasants are asked the purchase price of their cattle at the time of purchase and then again when it is sold) minimise the chance of collecting inaccurate data.

6.1 INITIAL CONTACT

From the beginning, it was decided to work through the traditional village structure, that is, with the village chiefs. Originally, the project proposal called for the creation of a network of cooperatives through which the project would be implemented. However, the independent nature of the peasants plus an often strong chauvinism between villages (for example, peasants from one village would refuse to come to another village to receive their loans) made it clear that a cooperative structure could only be introduced gradually, and certainly not before peasants realised and accepted that certain advantages might be gained if they worked together. Others have also pointed out the difficulty and questioned the wisdom of trying to introduce western-style cooperatives with the Djerma (14). Thus, the logical choice was to work initially with the accepted leaders and gain their support and confidence; a cooperative structure adapted to the needs and way of life of the Djerma could be gradually introduced at a later stage.

With this in mind, care was taken right from the start to solicit the opinions of the chiefs and elders. Certain of their ideas led to modifications being made in the project proposal. For example, they objected to the stipulation that the project itself purchase the cattle to be fattened and place them with the peasants. Who would be responsible, they asked, if the animals failed to gain weight? Their objections, together with the experience of another cattle fattening project at Boubon which had tried, unsuccessfully, to place animals with peasants, led to the decision that each peasant would choose and purchase his own animal (15).

Before the first loans were made, a tour of all the villages in the Canton was undertaken to publicise and explain the purpose of the project. A meeting was held at each village with the chief and his people. At this meeting, a cassette tape prepared by the Radio Club of Niger about cattle fattening done by peasants in different parts of the country was played. The tape included interviews with peasants participating in other projects, who enumerated the benefits to be gained by fattening cattle. Afterwards, the project planned for Liboré was discussed and questions answered,

All fourteen villages in the Canton were invited to participate in

the project. During the first year, nine villages became involved, with one more joining during the second year. These were the villages where the sedentary Djerma people predominated. In contrast, the predominantly Fulani villages declined participation, saying they preferred loans to buy heifers for rebuilding their herds, which were decimated by the recent drought.

6.2 SELECTING THE PARTICIPANTS

Right from the start, it was made clear that participation in the project was open to every peasant in the Canton. After all, one of the project's major objectives was to introduce the practice of cattle fattening to as many peasants as were interested. Those wishing to obtain a loan to buy an animal for fattening were instructed to register with their chief and pay a deposit of 1,000 CFA (250 CFA = approx. 1 dollar). The deposit was fixed at a level considered to be within the means of all peasants, yet sufficient to deter those who were not really serious.

Upon completion, the list was reviewed by the village chief. His task was to decide which peasants merited and could be trusted with a loan. This method of selection acknowledged the authority of the traditional leaders and at the same time, obliged them to become involved in the project. Equally important, it enabled the principle of group responsibility for the loans to be introduced. Under this principle, each village is held responsible for the money lent to its inhabitants. If a peasant should fail to repay, no new loans are made to his village until the outstanding debt has been cleared. Criticism for imposing group responsibility has been voiced by Horowitz, on the grounds that the concept of collective responsibility is foreign to the Djerma (16). However, group pressure was considered the most effective means of encouraging repayment by peasants who were receiving large cash loans for the first time. Results (see 6.8) seem to bear this out.

Upon approval, the list was passed on to the technical assistant and his Nigerian counterpart. Initially, each individual peasant was visited to ascertain that he/she had a place to keep the animal, could properly feed it, and understood the obligations involved in taking a loan. How-

ever, very soon it became clear that virtually all the peasants could easily meet the first two criteria. As the workload of administering the project grew, the decision was taken to stop these individual visits and instead explain the obligations at the communal meetings held when loans were handed out.

6.3 DISTRIBUTING THE LOANS

Since the beginning of the project, a total of 34,268,000 CFA has been lent to peasants to finance the purchase of 857 head of cattle. The loans, made to a total of 831 peasants, were distributed in three groups during each "cattle fattening year" (September-August). The first and fourth group (second year) fattened their animals between September/October and January/February, the second and fifth group between February/March and June/July and the third and sixth group between May/June and August/September. The third and sixth groups were kept intentionally small, the objective being to determine whether fattening during the rainy season is a viable proposition.

The distribution of each group of loans was staggered so as to avoid unduly influencing prices not only at the time of purchase, but also later when the finished animals were presented for sale.

The loans were distributed at specially held communal meetings with the chief and recipients from his village present. At these meetings, the responsibilities and obligations of each recipient as well as the village's collective responsibility, which had already been carefully explained during the first meeting held to publicise and explain the project, were reiterated. Each peasant signed a contract in duplicate before receiving his/her loan. The contract was written in French, a language that very few peasants speak, let alone read. Yet it is true to say that very few of them can read their own language, Djerma. Thus the signing of a contract amounted to a mainly symbolic gesture, the possession of an official piece of paper underlining the importance of the undertaking. Nevertheless, the contract also served as a reference point which could be referred to if any questions or disagreements concerning the peasant's obligations arose.

Initially, each peasant was restricted to a loan for the purchase of just one animal. This restriction was considered necessary given the absence of criteria for objectively judging a priori the capability of each peasant to fatten cattle. It was wiser to let each person first prove to himself, his fellow villagers and those running the project that he could do a good job with one animal before deciding to give him a loan for the purchase of two or more head. This system enabled the considerable financial risk of lending money to finance what for many was a totally new activity, to be minimized.

The size of the loans for the purchase of the cattle was fixed at 36,000 CFA. This sum was judged, after a visit to local cattle markets, to be sufficient to buy a steer or bull suitable for fattening over a three to six-month period. Peasants could, if they wanted, borrow an additional 4,000 CFA which was earmarked for the purchase of feedstuffs, salt licks and medication. This extra sum was provided to help ensure that the cattle would be well fed, free from disease and consequently gain weight rapidly. All but three peasants chose to take the full 40,000 CFA.

6.4 PURCHASING THE CATTLE

As already mentioned, it was decided to let the peasants rather than the project purchase the cattle. An inevitable risk with this approach was that some peasants might buy animals unsuitable for fattening; to minimize this risk, three general guidelines were laid down. Each animal had to be male, in good health, and weigh a minimum of 200 kg. Animals weighing less than this were unlikely to attain the desired finished weight of 300-350 kg within the specified fattening period of up to six months.

6.4.1. Markets Frequented

Initially, most of the peasants bought their cattle at the two local markets they were most familiar with: Liboré and Niamey. Investigation showed that prices at these two markets were relatively high compared with those at markets a little farther distant. The problem was to convince the

peasants to visit these cheaper but also unfamiliar markets. Their reluctance was eventually overcome when communal visits were organised using the project vehicle for transport. However, once these outings were begun, the peasants wanted them to be continued. The combination of free transport and cheaper animals was too good to let go.

The relatively high cost of transport (for example, 800 CFA for a round trip to a market 40 km distant plus 500 CFA for the transport of the purchased animal back to Liboré) meant that the majority of peasants bought their cattle within a 40 km radius of Liboré. It also meant, at least in the beginning, that peasants tended to decide to purchase their cattle at a given market on a specified day. If prices were high that day, they would still buy. The relatively high cost of transport deterred them from shopping around. Later, as the peasants began to organise themselves, this problem was partly overcome. Groups of peasants would designate one or two people to visit the markets and, if prices were attractive, they would buy for the whole group. Despite the advantage of this method, many peasants preferred still to purchase their own animal.

6.4.2. Initial Control

After purchase, each peasant was required to present his animal for weighing, worming and marking with an eartag. Information regarding the owner and his animal was taken down on a sheet kept for each animal. Analysis of data from these records provided the following results.

6.4.3. Prices Paid

The prices paid for cattle varied enormously, from a high of 42,000 CFA to a low of 21,500 CFA. Part of the variation in prices was, of course, due to differences in the size of animals bought (see 6.4.4.) and part due to the seasonal movement of cattle prices. The average price paid for animals bought during the first year was 32,115 CFA while that for the second year, 34,026 CFA.¹

¹ Prices and weight for second year based only on animals weighing at least 200 kg. at time of purchase.

Figure 1 shows the movement of liveweight prices (in CFA/kg) for cattle bought by peasants between September 1976 and July 1978. The apparently well defined seasonal cycle reflects, at least to a certain extent, the availability of cattle for fattening which are culled from the large herds kept by the Fulani. Between September and December, these animals are plentiful, the Fulani having just returned to the agricultural zones with their herds. By May/June, the Fulani leave once again to make way for the planting of crops.

6.4.4. Size of Animals Bought

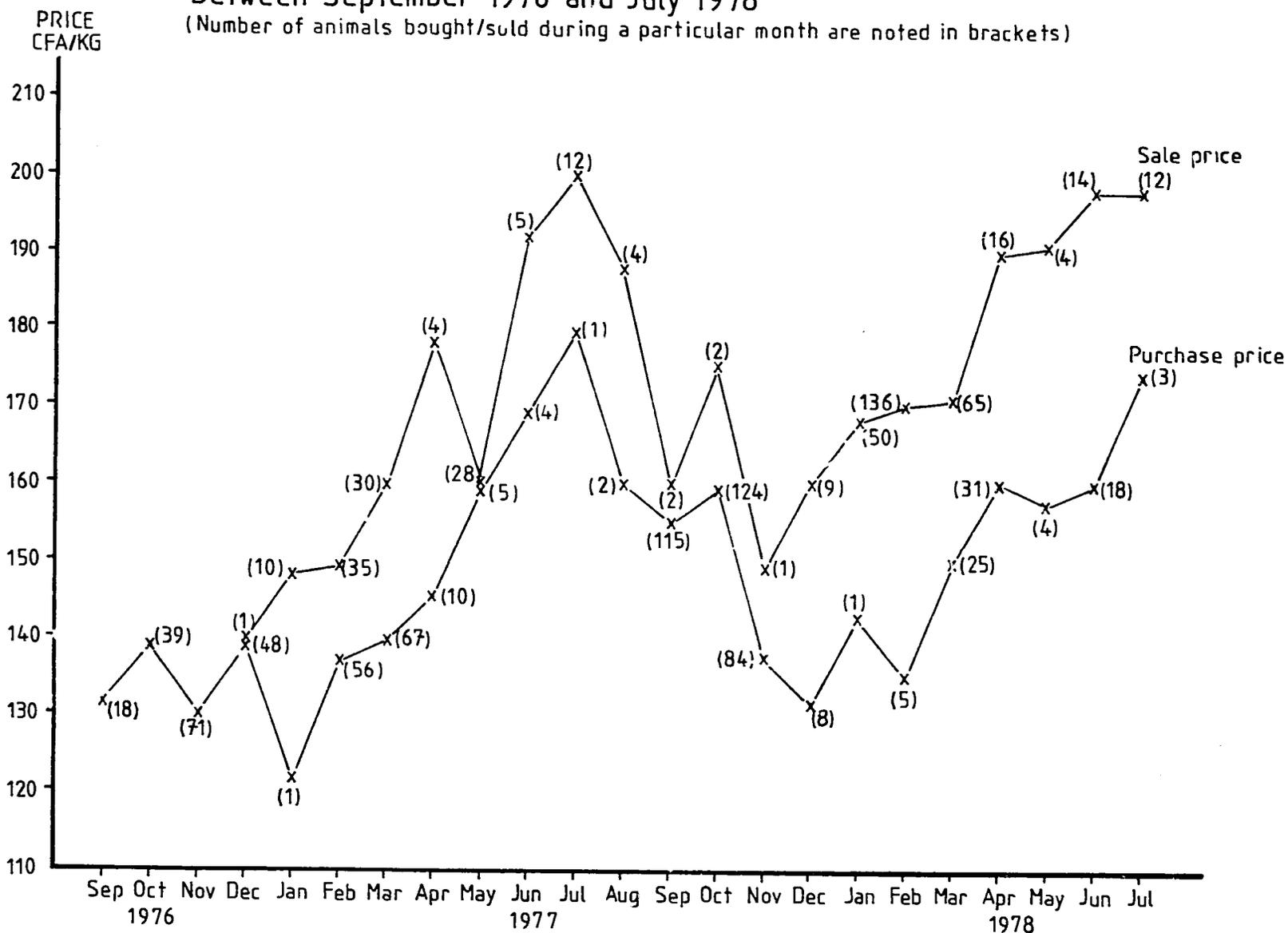
The average weight of animals bought during the first year was 235 kg, and for the second year was 226 kg. During a given year, the weight of animals tended to vary according to the season when they were bought. Thus, for example in the first year, the average weight of animals bought with the first group of loans was 250 kg; that for the second group 218 kg; and that for the third group 195 kg. This overall decline in weight as the "fattening year" progressed can be explained by two factors. First, and most important, as the dry season which begins in September/October and continues until the end of May/beginning of June advances, cattle presented on the market become progressively thinner. Second, beginning with the second group, a small number of peasants decided to spend a minimum of their loan on the purchase of an animal and invest the remainder elsewhere. As a result, several animals weighed less than the 200 kg specified.

6.4.5. Age and Race

At the beginning, the peasants tended to buy animals of all ages. In the first group, the youngest animal was just under two years of age, the oldest over eight years. A full 37 percent were over four years old. However, as the project progressed, the number of older animals bought diminished so that by the fourth group (i.e. first group, second year), the percentage of animals over four years old had dropped to 11 percent. Experience had shown the peasants that older animals often took longer to settle in, were more prone to health problems and consequently gained

FIGURE 1 Purchasing and Selling Prices for Cattle Fattened at Libore
Between September 1976 and July 1978

(Number of animals bought/sold during a particular month are noted in brackets)



NOTE: Purchase and selling prices based only on cattle weighed within two weeks of date of purchase and sale.

weight more slowly than the younger ones.

The majority of animals purchased were either Djelli or Djelli crosses. For example, 69 percent of the animals in the fourth group belonged to this breed. While the Djelli cannot be said to be the most suitable animal for meat production, it is the breed which predominates in the Liboré region. To find the more suitable Azawak, peasants are obliged to visit markets further north. Most of these markets are at least 100 km distant, which is too far for most peasants.

6.5 THE FATTENING PERIOD

After the initial control, peasants took their cattle home where they tethered them under a tree or simple shelter in the walled concession. Here the animal remained for a minimum of three months, surrounded by women pounding millet, babies crying and men sitting on straw mats. The minimum length of the fattening period was intentionally fixed so as to prevent peasants from using their loans for speculation. The maximum length of the fattening period was six months, by which time the loan had to be repaid in full. This flexibility in the length of the fattening period acknowledged the fact that not all cattle fatten at the same rate.

6.5.1. Forage and Feedstuffs Utilized

Throughout the fattening period, all forage, other feed and water is brought to the tethered animal. The forage used depends primarily on the season of year. From September until December, peasants collect and feed grass that has grown between the rows of millet during the rainy season. By December, this source is all but exhausted and they turn to harvesting bourgou, a grass which grows along the river's edge. As the dry season advances, the river, swollen from the rains earlier in the year, begins to recede. By late February/early March, the bourgou has literally dried up. If peasants have failed to make any stocks of forage, they must now depend on what little grass grows between the irrigated rice plots and, later in May, on the straw from the harvested rice. By the end of June, the rains have usually begun again and forage is once more abundant.

Peasants also feed their animals a variety of byproducts from cropping operations. The three most important ones are millet bran, rice bran and cotton seed. The first one is produced when the women prepare millet for the family. It is available year round in small quantities, but is often used to fatten the sheep and goats owned by the women. However, if a woman buys a steer to fatten, she will invariably reserve part of the bran for it. The other two byproducts are bought by the project from processing factories located outside the fattening area and sold to the peasants at cost plus transport. The locally available rice bran which comes from rice grown in the irrigation scheme at Liboré is not, for reasons described later (see 6.11.2.) a very suitable feed.

As yet, Niger does not have an animal feed industry which produces balanced rations for fattening cattle. Consequently, the nutrition of the cattle being fattened at Liboré is pretty rudimentary. The type and quantity of a given byproduct fed depends largely on the individual animal's preference and the availability of that byproduct.

6.5.2. Follow-up

Peasants with cattle are visited every ten days by one of the project's two *aide-encadreurs*. These extension agents speak the local language (one is from Liboré itself), come from peasant backgrounds and have completed a primary education so that they possess the basic literary skills. Their job is to work with the peasants, giving them advice on different aspects of cattle fattening. During the course of their visits, they make observations regarding the health and feeding of each animal and note these down in a journal. Advice is given, and should a peasant have any questions, these are discussed on the spot. Any large intractable problems encountered are referred back to the technical assistant and his counterpart. Needless to say, the role of these extension agents is vital to the success of the project; a project which after all is introducing a large number of peasants to a relatively new activity.

6.5.3. Weight Gains

After the initial weighing at the time of purchase, each peasant was

required to present his animal every month for subsequent weighing. These periodic weighings meant each animal's progress could be carefully followed. Animals gaining less than 250 grams/day were automatically examined for the presence of internal parasites. During the second year, these monthly weighings were limited to animals located in the three villages closest to the weighing scales; it was decided to be unreasonable to ask peasants living in the more distant villages (up to seven km away) to bring their animals each month for weighing.

Given the wide variety of animals bought, especially in the first year, and the different feeds utilised, it is not surprising that weight gains varied widely. For example, during the first year, a handful of animals (2 percent) actually lost weight, while 6 percent registered gains of over one kg. a day. The average daily weight gains were fairly respectable: 603 grams/day for the first group, 470 grams/day for the second, 696 grams for the third, and 475 grams/day for the fourth.¹ The poor overall performance of the second group can be attributed primarily to the difficulty peasants encountered in obtaining sufficient forage to feed their animals during the dry season, while the surprisingly poor performance of the fourth group reflects the decision by peasants in the four villages most distant from the Niger river to try and substitute bourgou with dried but bleached grass (see 6.11.1.). In addition, the average length of the fattening period for the fourth group was considerably longer than for the other two groups.

Weight gain data from the first, second and fourth groups was analysed to determine the rate of growth during different phases of the fattening period and also to see whether, bearing in mind changes in growth rates over time, peasants were keeping their animals for an optimum length of time. The small size of the third group (nine animals) together with widely varying buying and selling dates made similar analysis for this group impossible. Animals from the first group put on weight at an almost constant rate throughout the fattening period (Figure 3), while those in the second group

¹All weight gain results are based only on those animals weighed within two weeks of purchase data and, once fattened, within two weeks of the date of sale. Data for the fifth and sixth groups is not available since not all the animals have been sold.

actually gained weight more rapidly towards the end of the fattening period than at the beginning. This increased rate in weight gained as the fattening progressed can be explained by the sudden abundance of forage (the rainy season having just begun) after several months of scarcity. The fourth group made gains which can be more closely associated with a "normal" growth curve.

At first sight, the growth curves suggest that peasants in both of the first two groups would have benefited by keeping their animals longer than the average of 116 days for the first group and 100 days for the second. This is certainly true for the first group, given the movement of prices for finished cattle (Figure 3). By keeping their animals longer, say until February/March, they would have benefited not only from the increased revenue accruing from additional weight gained, but also from the upward movement in liveweight prices for finished animals. The fourth group seems to have learned this lesson; they kept their cattle for an average of 136 days. In the case of the second group, however, the benefits accruing from further weight gains would probably have been offset by the movement in prices for finished animals which peaked at the beginning of July and then began falling.

In discussing the optimum length of the fattening period, it is important to keep in mind that peasants are required to keep their animal for a minimum of three months, during which time they receive no tangible (apart from manure) benefits. By the end of three months, the family's need for cash, especially during the dry season, may be such that the peasant is obliged to sell even though he could probably make more money by keeping his animal another month longer.

Interestingly, uncastrated animals on the whole gained weight faster than castrated animals. For example, in the fourth group, the bulls gained an average of 495 grams/day, the steers 411 grams/day. Bulls also outnumbered steers by more than two to one.

6.6 SELLING

Peasants were free to sell their fattened cattle whenever (provided they observed the minimum and maximum length of the fattening period imposed)

wherever, and to whomever they wanted,

6.6.1. Markets for Selling

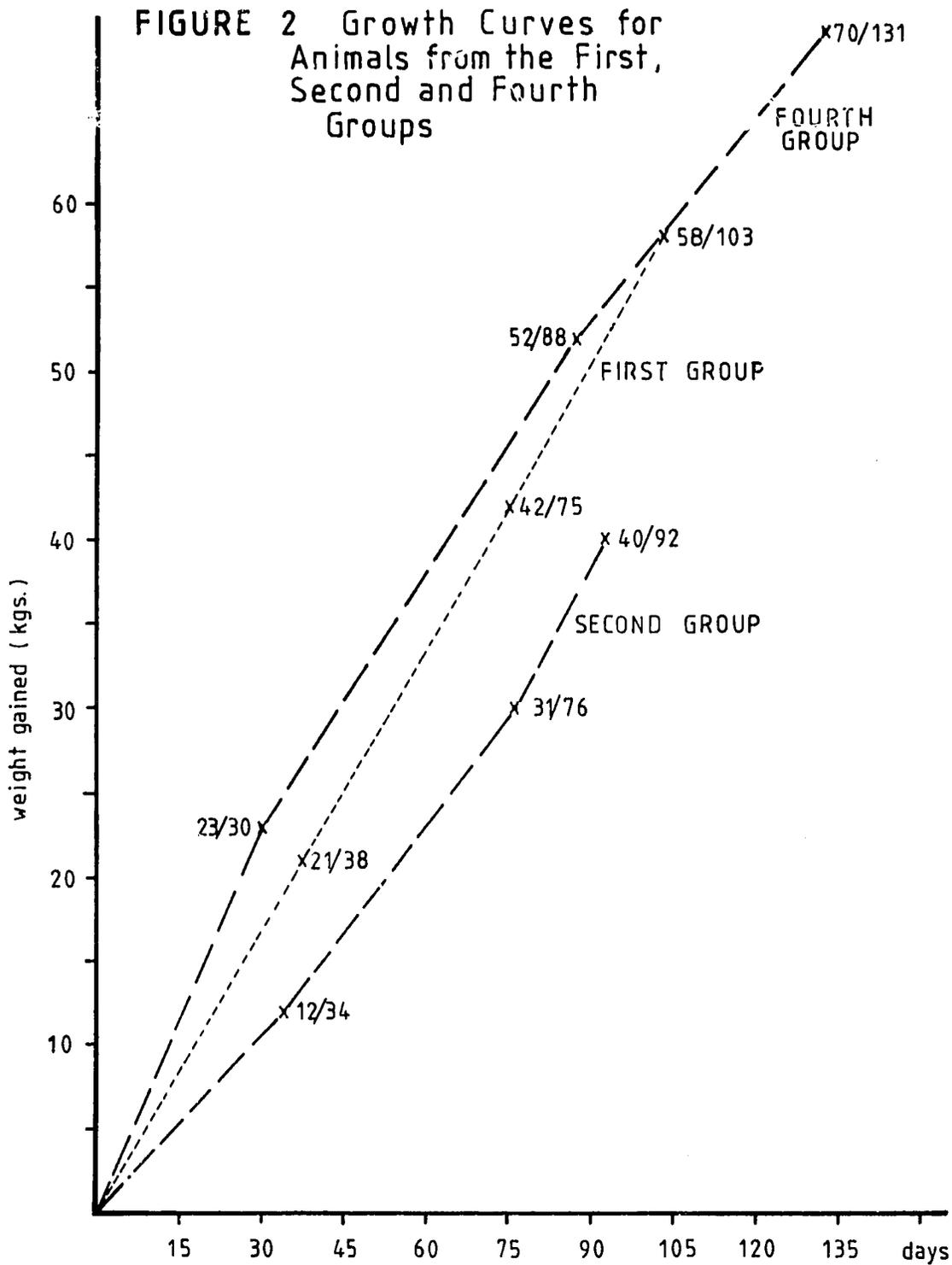
Nearly all the finished animals were sold to the butchers of Niamey, though a handful were slaughtered and consumed in Liboré itself. However, in the beginning, the Niamey butchers were reluctant to come to Liboré, and when they did they all offered identical prices, which the peasants decided were too low; so the peasants drove their cattle to Niamey, which is only fifteen kilometres distant. They encountered no problems there, the relatively large numbers of buyers making collusion over prices all but impossible. In time, the butchers of Niamey returned to Liboré and started offering what the peasants considered were reasonable prices.

During the first year, one small group of nine animals was sold to SONERAN (Société Nigérien pour l'Exploitation des Ressources Animales), a "mixed" enterprise, though 99 percent government owned, which was created in 1968 to promote the export of meat. Unfortunately, the flooding of the coastal market (for example, Abidjan) in recent years with imported frozen beef shipped in by sea from countries such as Argentina has meant that Niger, which can only ship its meat to these distant markets by air, has lost many of its traditional outlets for carcass meat. Nevertheless, during the second year, peasants at Liboré sold another 120 head of fattened cattle to SONERAN, though this time the animals were destined for domestic consumption.

6.6.2. Prices Paid

Only the animals sold to SONERAN were sold on a liveweight (kilo) basis. The rest were sold by the traditional method of bargaining where the actual weight of the animal is estimated by the prospective buyer before proposing a price. However, since the project insisted that its cattle be weighed before being presented on the market, prices on a liveweight basis can be computed.

Figure 2 shows a distinct seasonal cycle for prices of fattened animals. From August/September through to November/December, prices fall steadily.



NOTE: The growth curve for the first group is based on thirty animals bought in October 1976 (the month in which most of the animals in the first group were bought) which completed all the monthly weighings. Similarly, the growth curve for the second group is based on 22 animals bought in March 1977 and the fourth on 62 animals bought in October 1977.

In January/February, they begin to climb and continue to rise until reaching a peak in June/July. This upward movement reflects the availability of fat animals, which become scarcer and scarcer as the dry season progresses. Finally, by July, the rainy season is well underway again, forage is once again abundant and fat animals plentiful.

Figure 2 also indicates a price differential between thin and fat animals. This differential is at a minimum around November/December. At this time of year, there is virtually no difference between the condition of cattle being fattened by sedentary peasants and the cattle kept in large extensive herds by the Fulani. The latter are still fat, having just returned from transhumance and fattening on rain-fed pasture. The differential widens as the dry season advances, pasture dries up and the Fulani's cattle become thinner and thinner.

6.7 PROFITS REALISED

Peasants fattening cattle made an average gross profit of 16,684 CFA during the first year, and 15,420 CFA during the second. The figures for the second year are based on the fourth group only, all the animals of the fifth and sixth groups not being sold at the time of writing.

To gain a more accurate impression of the profitability of fattening cattle, net profit was also computed. Since data required to compute net profit is fairly detailed, samples of peasants in the first, second and fourth groups were randomly drawn. Net profit was calculated for all the nine peasants in the third group.

During the first year, peasants made an average net profit of 9,668 CFA and during the second year (fourth group only) 9,797 CFA. Average profit levels for the first, second and fourth group were much the same, being 9,456 CFA, 9,762 CFA and 9,797 CFA, respectively. However, the average level of the third group was 13,640 CFA. These results indicate that the profitability of fattening cattle remains at much the same level throughout the year, though it is probably most profitable during the rainy season (when the third group was fattened). The results for the third group must be interpreted with caution, since the nine peasants involved were carefully selected on the basis of past performance. As noted earlier,

the objective of the third group was to see whether it was possible to fatten cattle during the rainy season when peasants are preoccupied with tending their crops. Nevertheless, taken as a whole, the results suggest that cattle fattening can be a profitable activity for peasants all the year round.

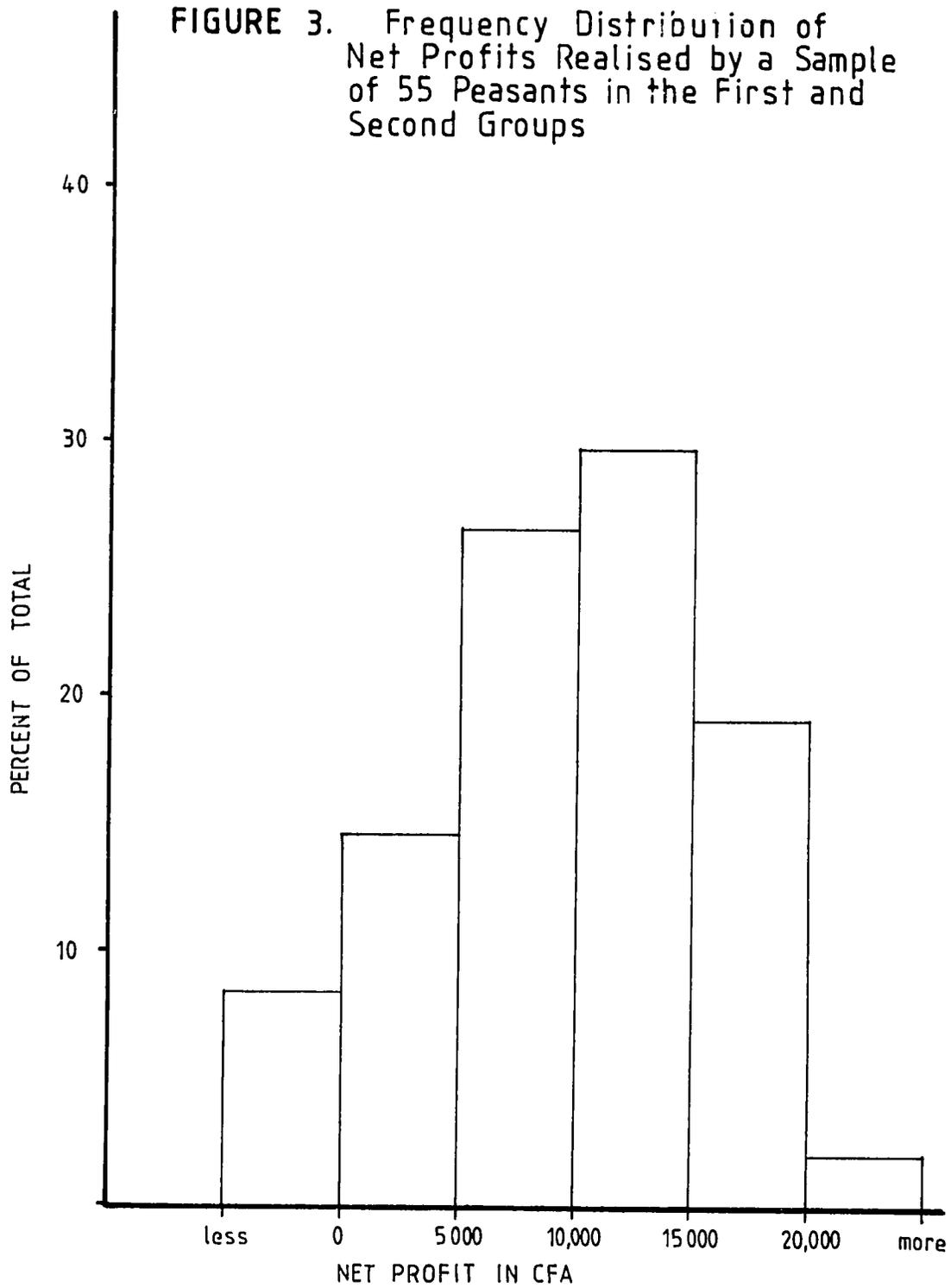
While a small number of peasants actually lost money during the first year (groups one and two only), a sizeable number made a handsome profit, as shown in Figure 3. Net profit is defined as gross profit (the difference between sale price and purchase price) less all cash costs incurred in fattening the animal, including interest paid on the loan. Thus, net profit is basically the return to the peasant and his family for their labor.

6.7.1. Factors Influencing Profit Levels

The factors influencing profit levels realised from fattening cattle can be divided into two groups: seasonal and non-seasonal. Included in the first group are seasonal movements in cattle prices and changes in the availability of forage, which tend to be reflected in the weight gains registered at a given time of year. These two factors appear to offset each other for much of the year. Thus, when forage is relatively abundant and consequently weight gains are high, prices for finished animals tend to be at their lowest, and vice versa. This explains why the average profit level realised by peasants fattening cattle just after the end of the rainy season (first and fourth groups) was similar to that realised by peasants fattening during the dry season (second group) even though the average overall weight gains registered by the former were sixty-four and sixty-seven kg respectively, while that of the latter was only forty-two kg. These results suggest that the profitability of fattening cattle during the dry season could be substantially increased if the problem posed by the lack of available forage at this time of year could be overcome.

Nonseasonal factors which probably influence net profit levels include ability of individual peasants to fatten animals properly, breed and age of animal, purchase and sale price (which can vary considerably during a given period, depending on such things as where the animal is bought and sold) and finally, the costs incurred in fattening an animal. Multiple

FIGURE 3. Frequency Distribution of Net Profits Realised by a Sample of 55 Peasants in the First and Second Groups



regression analysis would be necessary to ascertain the relative importance of each of these factors. Unfortunately, lack of computer facilities at Liboré makes this an all but impossible task, at least at present.

Nevertheless, one simple but useful computation that indicates whether one of the basic premises behind promoting cattle fattening by peasants is valid, can be performed. This basic premise is that weight gain and profit level are positively correlated. Computing the coefficient of determination for these two variables using the twenty animals in group two that completed both the post-purchase and pre-sale weighings, yields $r^2 = 0.42$. Thus, less than half the variation in profit levels was accounted for by weight gains.¹ Nevertheless, when the null hypothesis that these two variables are statistically independent is tested, the value of $t = 3.6$ (d.f. 18) is such that one can only conclude that at any desired level of significance, that there is indeed a correlation between weight gains and profit levels realised.

6.7.2. Profitability of Cattle Fattening Compared with Other Activities

Unfortunately, it is rather difficult to compare the profitability of fattening cattle with that of other productive activities in which a peasant may engage. The difficulty arises when trying to estimate the amount of time expended on fattening an animal. Cattle fattening is a part-time activity whose labor requirements, with the exception of routine chores, can vary widely from day to day. For example, on a certain day, the peasant may decide to go out and collect forage that will feed his animal for a day, two days or a week. What is more, this work may be done by the peasant himself, his children, or he may hire someone. Finally, the procurement of certain kinds of feed may be related to non-cattle fattening activities; for example, millet bran is produced when millet is being prepared to feed the family.

A conservative estimate, based on observation and personal experience, is that averaged over the entire fattening period, a peasant and his family

¹Note that the coefficient of determination was computed using gross profit and weight gains. Gross profit was used instead of net profit since it enabled the influence of a third variable, costs incurred in fattening, to be eliminated.

do not spend more than two hours a day per animal. Using this figure, return per man-day of labor expended by peasants in the first two groups averaged 362 CFA. This return compares favorably with the 114 CFA/man-day for growing millet, 110 CFA for sorghum and 312 CFA for irrigated rice using traditional methods which were all estimated for 1976 (17).

6.7.3. How Profits Were Spent

Peasants in the samples drawn to compute net profits were also asked how they spent money earned from fattening cattle. The replies from peasants fattening during the first year (see Table 2), indicate that the majority used the money to buy millet to feed their families. This is hardly surprising considering that because of population density, Liboré is a deficit region in this basic food crop. Also, profits from fattening tended to be realized in the middle and towards the end of the dry season, when food is, in any case, scarce.

6.8 REPAYMENT OF LOANS

Peasants were required to repay their loans immediately after the sale of their cattle. An interest rate of 5 percent per annum was charged on the first group of loans, 6.5 percent on the second and third group, and 8 percent thereafter. The gradual increase in interest rates was made to bring the Liboré project into line with interest rates charged by similar projects.

On the whole, repayment of loans has been satisfactory. During the first year, 99.92 percent of the money lent out was reimbursed. At the time of writing, 85 percent of the money lent out in the second year has already been repaid; 14.7 percent is still tied up in cattle that have yet to be sold, and only 0.3 percent remains as outstanding debts. In most cases, peasants with outstanding debts are those who either sold their animals at a loss or else sold to a butcher on credit. In only five cases (out of peasants taking out a loan in the second year) is the question of non-payment one of bad faith.

To encourage payment of outstanding debts, the village responsibility clause in the contract (see 6.2) was brought into effect during the first

TABLE 2

SPENDING OF PROFITS REALISED BY
FATTENING CATTLE DURING THE FIRST YEAR
(groups one and two)

ITEM	PERCENT OF TOTAL
Food for the family	71
Purchase of animals	13
Pay labor to cultivate rice paddy and/or millet	8
Clothing	2
Furniture	2
Taxes	2
Miscellaneous	2
	<hr/>
TOTAL	100

year and will again be exercised this year. During the first year, group pressure proved sufficient to convince five out of the eight peasants with outstanding debts at the end of the "fattening" year to pay up. The names of the remaining three were sent to local authorities and by 31 October 1977, they too had repaid in full. All that remained then was a 10,000 CFA loss brought about by the death of a peasant before he had repaid his entire loan.

6.9 TAKING OUT A NEW LOAN

Upon repayment of a loan, peasants were free to take out a new loan. However, peasants taking out a loan for the second time were first required to meet certain criteria (see Table 3). These criteria were established to ensure that each peasant's performance with his first animal was judged according to a uniform set of standards. The basic objective was to reward peasants who had done well by making them eligible to take out a new loan for the purchase of two animals rather than one; to encourage those who had worked conscientiously but had only obtained mediocre results, but to eliminate those whose performance indicated they were not serious.

As usual, newcomers to the project were required to deposit 1,000 CFA when applying for a loan. However, those applying for a second loan were required to pay 2,000 CFA. This increase in the deposit was aimed at encouraging peasants to save some of the money made from fattening cattle. It was hoped that one day the amount of money deposited with the project would be sufficient so that by withdrawing his savings, a peasant would be able to continue financing his cattle fattening activities by himself. The project funds previously lent him could be passed on to a new peasant wishing to start fattening cattle.

By the middle of the second year, it became very clear that this method of encouraging savings was unrealistic. Several peasants saved until they had 10,000 CFA deposited with the project; however, sooner or later, the immediate cash needs of most peasants, be it to buy a sack of millet or pay for a baptism, forced them to withdraw their savings. On top of this, the rate of saving which amounted to a maximum of 5,000 CFA a year meant that a peasant would have to save continuously for six or

TABLE 3

CRITERIA TO BE MET BY PEASANTS
APPLYING FOR A NEW LOAN

A. CRITERIA LEADING TO EXPULSION

- failure to repay previous loan by due date
- sold animal within three months of date of purchase
- failure to weigh animal after purchase or before selling
- failure to pay insurance contribution

B. CRITERIA LIMITING THE APPLICANT TO A LOAN FOR THE PURCHASE OF ONE ANIMAL ONLY (must fulfill at least four of the following six conditions)

- bought previous animal within one month after receiving loan
- animal weighted at least 200 kg. at the time of purchase
- completed all the monthly weighings
- registered an average daily weight gain of at least 300 gm.
- followed advice given by project personnel
- repaid loan within ten day of selling animal

C. CRITERIA PERMITTING APPLICANT TO TAKE OUT A LOAN FOR THE PURCHASE OF TWO ANIMALS

- fulfill all six criteria listed in B.
-
-

seven years before being able to finance his own purchase of cattle. Such a period is just too long.

6.10 CHANGES IN THOSE PARTICIPATING

During the course of the project, an important shift occurred in the composition of those participating in the project. The proportion of women taking out loans rose from 6 percent in the first group to 36 percent by the fourth. This increased participation by women is not surprising, since traditionally it is they and not the menfolk who fatten cattle. However, in the past, lack of capital limited their fattening activities mainly to small ruminants. The initially poor participation by women in the project may have something to do with the restrictions imposed on women by what is basically a Muslim society. After all, if a woman takes out a loan and fails to repay it, either her husband or her father is, under local custom, held responsible.

6.11 RELATED ACTIVITIES

Besides administering the credit programme and providing technical backup, the project has also been involved in several secondary activities. These activities could have an important bearing, at least in the long run, on the success or failure of promoting cattle fattening amongst peasants. They are all aimed primarily at increasing both the quantity and quality of forage and feestuffs needed for fattening cattle. The limited availability of forage during the dry season has already been noted (see 6.5.1); as have the relatively poor weight gains registered during this period of the year (see 6.5.3).

6.11.1. Improving the Availability and Quality of Forage

The two major sources of forage are the grass that grows between the rows of millet during the wet season and bourgou, which grows along the edge of the Niger River. The former is abundant from late June until the end of the rainy season; however, the peasants make no attempt to conserve

the grass by making hay during the rainy season. Instead, they wait until October/November before cutting and stocking it. By this time, the sun has bleached the grass white, and nothing but stalks remain.

Peasants claim the reason they do not make hay during the rainy season, when grass is abundant and has a relatively high nutritive value, is that they lack shelters to store the hay in and protect it from the rain. To try to overcome this problem, the project recruited three volunteers who said they were interested in making hay, and bought them material to build three straw huts. The peasants agreed to build the huts themselves, after which they would use them for stocking the hay they made. As it turned out though, only two of the peasants put up their huts and none of them made hay. Obviously there were other reasons for not making hay during the rainy season, among them preoccupation with the millet and possibly also difficulty in seeing the benefits of considerable work which would only begin to bear fruit some six months later. To overcome this latter obstacle, it may be necessary, at least at first, to offer peasants an immediate monetary incentive for making hay during the rainy season.

In the end, the project took over the two huts and employed peasants to make hay. This hay was fed to demonstration animals kept during the second year by the project. Hopefully this modest effort has shown at least some of the peasants the possible interest of conserving grass when it is abundant and has a relatively high nutritional value.

In the case of bourgou, peasants lacked the means to harvest and transport this river grass. To overcome this problem, the project set up a rolling fund to finance the purchase of boats and donkey-drawn carts. To date, fifteen boats and thirty-five carts have been distributed.

During the first year, it became apparent that lack of boats and carts might not be the only problem. Equally important might be the seemingly irrational way in which peasants exploited this important traditional source of forage. Bourgou starts growing when the river begins to rise towards the end of the rainy season. It disappears some six months later as the water level in the river recedes, but peasants wait until December before starting to harvest the bourgou, and then usually make just one cut.

In an attempt to see whether the overall yield of bourgou could be increased by starting to harvest earlier in the season and cut at regular

intervals, three plots were fenced off along the river's edge. Each plot was divided in two, one-half being harvested according to traditional practices, the other half to be cut periodically. Results showed that in fact yields could not be much increased by cutting regularly. After the first cut, the bourgou tended to spread out horizontally rather than grow vertically.

6.11.2 Improving the Availability and Quality of Feedstuffs

It was mentioned earlier that as of yet, there is no animal feed industry which can produce balanced rations for fattening cattle. Consequently, the best use must be made out of byproducts from cropping operations. With a 250-hectare irrigated rice scheme, Liboré has a potentially important source of one byproduct, rice bran, right at its doorstep. Unfortunately, the small motor-driven machines (Engleberger type) used to dehusk and polish the rice in one operation are not capable of recovering the bran. Instead they produce a mixture of husks and bran which has a relatively low nutritive value and is not very palatable.

To solve this problem, the project has been experimenting with two new and different machines. The first attempts to separate the mixture after the paddy has been dehusked and polished while the second removes the husks from the paddy before it is polished. Both machines are manufactured by the same company (Lewis Grant Ltd, Scotland) that sells the machines already found in the village. They have a modest capacity, and are simple to operate and repair. Experience to date suggests the second machine is the most appropriate. Shelling paddy and then polishing tends to produce a cleaner bran than does trying to separate out the mixture of bran and husk. What is more, this machine's capacity is such that it could shell all the paddy treated by the other machines in the village. By first passing their paddy through the sheller before taking it to the existing machine operators, peasants throughout the village would be assured of a steady supply of clean bran.

7.0 PROBLEMS ENCOUNTERED

Not surprisingly, quite a few problems have been encountered during

the first two and a half years. The decision made right in the beginning to keep the project as flexible as possible meant that problems could be dealt with rapidly and the necessary adjustments be made to the project with a minimum of disturbance. The problems encountered fell basically into five categories.

7.1 SELECTION OF PARTICIPANTS

Leaving the selection of participants to the village chief meant that occasionally, favoritism played a role. To prevent favoritism from playing too big a role, each village was asked to elect two peasants to assist the chief in screening applicants. The creation of this committee was also the first step taken away from working through the traditional structure and towards the setting up of a more democratic structure based on cooperative lines. Towards the end of the second year, some villages reached the stage where these committees not only handled selection procedures but also took on responsibility for distributing and recovering loans.

7.2 PURCHASE OF CATTLE

Two problems associated with the purchase of cattle for fattening were encountered. The first concerned a small number of peasants who spent a minimum on the purchase of an animal and then invested the remaining money elsewhere. Not surprisingly, their animals often failed to meet the minimum purchasing weight specified (see 6.4.4.). To prevent this practice from getting out of hand, the contract clause stating that animals must weigh a minimum of 200 kg. at time of purchase was strictly enforced. Peasants presenting small animals were told to sell and buy another. Refusal meant elimination from the project.

The second problem concerned peasants who bought animals that were large enough but which, for a variety of other reasons, were unsuitable for fattening. Typically, these animals were either very old, had an undesirable conformation (usually long-legged), or else had a mean disposition. Educating the peasants as to the type of animal best suited for fattening

is a long-term process. A display of photos in the project's office, which peasants frequently visit, show off some of the better animals. More effective probably is self-education. The wide participation in the project has meant that there is always an important number of cattle scattered around each village. Thus each peasant can easily compare the performance of his animal with that of his neighbors. Results (see 6.4.5) suggest that peasants learned quickly that younger animals tend to fatten more easily than older ones.

It is worthwhile to note that any system of purchasing is bound to encounter certain problems, and a small number of peasants are bound to try to abuse it. The above problems are peculiar to a system where the loan is made in the form of cash to the peasant, and he is given the entire responsibility of buying. Another system, employed by other projects in Niger, is a buying commission made up of peasants and government officials. While a commission may avoid the above problems, it creates others. It is cumbersome, expensive and its presence at markets tends to push prices up. Most important of all, though, the creation of such a commission implies that the peasants can't be trusted when it comes to giving credit. If peasants are always kept in such close rein, when will they get the opportunity to learn access to credit also means accepting certain responsibilities?

7.3 DURING THE FATTENING PERIOD

Despite the reasonable overall weight gains registered, a handful of animals in each group always performed poorly. Usually the reasons for poor performance were clear enough; either the animals were not sufficiently well fed, or they had internal parasites. However, there were always some that were well fed, free from parasites but still failed to gain weight. Peasants with such animals were authorized to sell and buy another. During the first year, four peasants ended up changing their animals.

During the first year, three out of the 354 cattle purchased died from a variety of causes while during the second year, four out of 503 died. In the instance of the very first animal, the project itself covered the loss. Later, an insurance scheme was introduced to which each peasant was required

to contribute 200 CFA/animal. During the second year, the contribution was raised to 300 CFA/animal. The resulting fund was drawn upon to compensate the owners of all the other animals that died. The insurance scheme covers 100 percent of a loss, provided the peasant has respected all the clauses in the contract signed before receiving a loan.

7.4 SELLING

Being close to Niamey, peasants encountered few major problems in selling their animals. Nevertheless, in May 1977 they came in for rather a shock. During this month, SONERAN (see 6.6.1) began to sell meat for the first time on the domestic market at a fixed price. This intervention on the open market came at the behest of the government which was concerned at the rapidly rising cost of living in the capital. Butchers reacted by offering much-reduced prices for finished animals (see Figure 2). An animal weighing 325 kg. that formerly sold for 57,000 CFA now only fetched 47,000 CFA. For a moment, there was panic amongst the peasants; luckily for them, the crisis was short-lived and by June, prices were back to their former level.

This incident illustrates the vulnerability of peasants to fluctuations in prices that fall outside what appears to be the "normal" seasonal cycle. It underlines the need for the government to keep both the consumer's and producer's interests in mind when considering any form of intervention. Otherwise short term measures that only favor the consumer could in the long run produce results diametrically opposite to those intended.

Another problem encountered in marketing finished animals concerned only the women. In Liboré and probably elsewhere in Niger, it is the custom that only men buy and sell cattle on the open market. Consequently, a woman has to find someone, often a relative, to sell her animal for her. In several instances, women whose animals had registered above average weight gains ended up making only a small profit. The person they had entrusted their animal to for selling simply had not bothered to bargain very hard so as to obtain a good price. To prevent this from continuing, the women were encouraged to go to the market and stay in communication with the person doing the selling, indicating whether or not the price offered was acceptable.

7.5 NON-RESPECT OF THE CONTRACT

The final problem concerns non-respect of the contract. Most of the infractions were relatively minor, for example, failure to present animals for all the monthly weighings. Usually peasants could be dissuaded from committing such infractions by gentle but firm persuasion aimed at convincing them that the conditions set forth in the contract were in their own interest. Thus, in the case of weighing, emphasis was placed on the fact that the monthly weighings show the peasant himself how his animal is progressing. This approach seemed to work. The proportion of peasants completing all the monthly weighings rose from 42 percent for the first group to 61 percent for the second.

A small number of peasants committed more serious infractions such as failing to repay their loans within the specified period, selling their animals before three months or else changing them without authorisation, or not paying their insurance contribution. By insisting that all peasants meet certain criteria before receiving a new loan (see Table 3), those committing the more serious offenses could be penalised accordingly. Nearly all were refused a new loan.

Experience at Liboré has shown that it is extremely important that any sanctions imposed be strictly and uniformly applied. If this is not done, there will always be someone who will try to bend the rules; once one has succeeded, others will try. Thus, it sometimes becomes necessary to make an example even though the sanction may, at the time and in the circumstances it is applied, seem severe. In one instance, the brother of a chief sold an animal belonging to a woman living in his concession to a butcher friend of his. He never asked the woman for permission. Since the animal had not been fattened for the minimum three-month period, sanctions were applied and the woman eliminated from the project. While the expulsion was undoubtedly harsh on the woman, it served notice on the others that the three-month rule could, under no circumstances, be violated. An important part of the project is to teach peasants how to fatten cattle properly; thus it is important that they learn the correct way right from the start.

8.0 SOCIAL IMPLICATIONS

An attempt was made to determine the social implications of the project, or more precisely, just whom in the village socio-economic hierarchy the project was reaching, and how it was affecting their overall income levels. Being basically a credit programme involving fairly large cash loans, it was thought that the richer peasants would have greater access to and would consequently benefit more from the project than the poor.

During the second year, a group of thirty heads of family was randomly picked from a list of just over 300 taxpayers living in Tonkobangou, the largest village in the Canton. These heads of family were interviewed to ascertain their overall income, their participation in the project, and the contribution fattening cattle made to their overall income. They were classified as "rich" and "poor" families; rich being defined as those with a per capita income of more than 30,000 CFA/year, poor with 30,000 CFA or less.

The overall participation of each group in the project is presented in Table 4. To obtain a clearer indication of whether participation in the

TABLE 4

PARTICIPATION IN THE PROJECT
BY A SAMPLE OF RICH AND A SAMPLE OF POOR PEASANTS

Number of Cattle Fattened	Poor Peasants	Rich Peasants
	(income 30,000 CFA or less/person/year)	(income greater than 20,000 CFA/person/year)
0	4	6
1	3	1
2	4	2
3	1	2
4	3	2
5	1	1
Total	16	14

project was more widespread among the richer peasants living in the Canton than among the poorer, or whether both groups were equally participating, a Chi square test was run on the sample data. The null hypothesis that both groups belonged to the same population, thus inferring equal participation by both, was accepted at the 0.05 level of significance (Chi square = 6.66, degrees of freedom = 5). However, given the average overall incomes of both groups, 51,100 CFA/capita for the rich versus a mere 16,050 CFA for the poor, it is obvious that in terms of overall impact on income levels and thus on standards of living, the poor benefited relatively more than the rich.

9.0 FUTURE PLANS

Initially, the Liboré project was planned for three years. However, despite the progress made during the first two and a half years, there is much work that needs to be done. As a result, a proposal for continuing the project until September 1980 was recently submitted to the Livestock Department, Ministry of Rural Economy and Euro Action Acord. The proposal calls for the project to concentrate its efforts in four areas.

First, the project should continue efforts already begun to organise the peasants so that eventually they will be in a position to take full collective responsibility for distributing and recovering the credit. Ideally, control of the credit will thus pass from the hands of the project to the peasants themselves.

Second, the project will continue to work towards solutions to the technical problems associated with cattle fattening done by peasants; more specifically, increasing the overall production and availability of forage and finding the best way to assure that all the local machines for treating rice produce clean bran.

Third, the project will undertake the training of peasants involved in the national fattening programme (financed by the EEC) in basic cattle fattening techniques. Upon completion of their training, these peasants will return to their villages where, it is hoped, they will teach, through example, what they have learned to the other villagers.

Fourth and finally, the project will continue to conduct research and

produce detailed reports on cattle fattening as practices by peasants as well as on related issues; for example, the marketing of finished cattle.

Both the government authorities responsible for the project and the funding agency have accepted the proposal. It is hoped that at the end of this prolongation, the peasants will be sufficiently well organised and solutions to the technical problems found to enable activities at Liboré to move out of a project framework and integrate entirely into the Nigerian services. Hopefully too, the Nigerian government will see fit to keep the physical installations at Liboré for a national research and training center for cattle fattening.

10.0 CONCLUSION

After two and a half years, some tentative conclusions about promoting cattle fattening amongst peasants can be drawn from experience gained at Liboré.

10.1 VALIDITY OF PROMOTING CATTLE FATTENING BY PEASANTS

The results obtained at Liboré indicate that a country like Niger can substantially increase its overall production of meat and improve the productivity of its livestock sector by promoting cattle fattening amongst peasants. Certainly, the overall weight gains registered by peasants at Liboré show that they, the peasants, are quite capable of fattening cattle properly, provided they have a minimum backup of technical advice and support; this despite the fact that the nutrition of the animals is fairly rudimentary.

Peasants are interested in fattening animals, since this activity is relatively profitable compared with other traditional productive activities they may engage in. It provides them with employment during the slack time of the year, supplements their incomes during the dry season when the family's resources are under the greatest strain, allows them to utilize byproducts from their cropping operations and provides a steady supply of organic matter with which to improve the fertility of often inherently poor soils.

The importance of this latter point should not be underestimated. Since the construction of the 250-ha irrigated rice scheme some eight years

ago, the number of cattle in the region, especially those in the large extensive herds kept by the Fulani, has tended to diminish. The rice scheme took up much of the traditional lowland pasture (mainly bourgou) where the Fulani fed their animals during the dry season. As a consequence, the overall amount of organic matter returning to the soil has also tended to diminish. In a region where population pressure means that most land is cropped year after year, this development could have serious long-term consequences. It is hoped that cattle fattening will help restore the all-important link between agriculture and livestock. Certainly the peasants recognise the importance of manure for their crops. Of a sample of twenty-nine peasants participating in the project, twenty-two said they put the manure from their fattening animal on their millet fields, four put it on their rice plants and only three sold or gave it away.

Finally, results from Liboré indicate that cattle fattening is an activity from which the poorer peasants in the village can benefit greatly in monetary terms. Its importance to the already rich tends to be less pronounced.

10.2 THE USE OF CREDIT

Lack of capital is the major constraint facing peasants wishing to fatten cattle. Credit enables this obstacle to be overcome. However, experience gained at Liboré shows the necessity of having a well-organized system for the disbursement and recovery of credit. This system should encourage the peasants themselves to take on as much of the responsibility as is possible for the management of the credit. The inclusion of the principle of group responsibility for loans tends to encourage repayment.

Peasants prefer to receive credit in the form of cash and be entirely responsible for the purchase of their cattle. This system of purchasing, as opposed to a buying commission, minimizes the administrative effort needed to control purchases. It also obliges peasants to learn that taking out credit requires accepting certain responsibilities that must be respected. A certain amount of control after purchase is necessary to assure that these responsibilities are indeed respected.

Distribution of a fixed sum of credit means that frequently there is a small sum left over after the purchase of the animal. Provided peasants buy suitably large animals, this sum is liable to remain at a reasonable level. The "excess" allows peasants to self-finance non-cattle fattening activities, which are nevertheless essential to the family's well being. Thus, when a peasant needs to buy a sack of millet, he is no longer obliged to take credit with a local trader and pay the often exorbitant interest rates demanded. The profitability of cattle fattening is such that, provided he does a reasonably good job of fattening his animal, he will encounter no difficulty when selling and repaying the fixed sum of credit plus interest some six months later. In fact, he is likely to have an appreciable sum left over which will permit him to continue self-financing his family's activities.

10.3 LOCATION AND TIMING

In order to successfully fatten cattle, peasants must have access to adequate sources of forage and feedstuffs. In a country like Niger, this means limiting cattle fattening to the southern fringe of the country where forage is relatively abundant and byproducts from cropping operations are available. Cattle fattened here are also relatively close to the major domestic centers of consumption, thus minimising the problems of transport.

It appears that cattle can be profitably fattened year round, provided the three well-defined cattle fattening periods (see 6.3) are respected. Taking into account the seasonal movement of prices for finished animals, it is clear that in theory, the most profitable fattening period is from February to June. In reality, it is no more profitable than the earlier one (September to January) since lack of forage during the dry season tends to restrict weight gains. This lack of forage underlines the need to find ways of encouraging the rational use of existing forage sources, as well as developing new sources.

Regardless of time of year, cattle should be fattened for a minimum period of three months. Any shorter period will mean that the majority of animals are not properly finished; a shorter period will also encourage peasants to use their loans for speculative rather than productive purposes.

If finished animals weighing 325-350 kg are desired, then the minimum weight of animals at time of purchase should average 250 rather than 200 kg.

10.4 ORGANISING PEASANTS

Organising peasants has, at least at Liboré, proved a slow process. Their independent nature as well as frequent rivalry between villages makes the task difficult. Yet organising them is necessary if they are to eventually take over control of managing the credit. Besides, once organised, they will stand a much better chance of protecting their own interests. Experience has shown it best to initially work through the traditional structure, gradually moving towards a "cooperative" form of organisation as the peasants begin to recognise for themselves the interest of working together.

10.5 MARKETING

In the final analysis, the success or failure of promoting cattle fattening by peasants on a large scale hinges on dealing with the thorny question of marketing the finished animals. There are basically two outlets for fattened cattle: the domestic market and the export market. Both need to be studied in detail, their capacity evaluated, rate of growth estimated and projected, obstacles to supplying them identified, and ways of overcoming these obstacles examined. Only then can a rational decision be taken as to the scale that cattle fattening by peasants in Niger should be encouraged.

If this is not done, marketing of finished animals could become a major problem with possibly far-reaching consequences. Prices for fattened cattle are likely to become depressed and profit margins fall to a point where many peasants are forced to discontinue fattening. As a result, demand for cattle suitable for fattening will weaken, and thus the economic incentive (albeit a relatively weak one) for nomads to cull "surplus" males from their herds will diminish. Extensive herds are likely, for reasons noted in Section 3, to increase in size, possibly to pre-drought levels. The risk of overgrazing and upsetting the fragile ecological balance is liable to increase, and in time the same conditions which preceded and probably contributed to the recent drought are likely to be replicated.

This synopsis not only underlines the need for tackling the whole marketing question, but also points out the need to investigate the implications of promoting cattle fattening amongst sedentary peasants on the activities of the nomadic population. If the activities of one group do not have beneficial consequences for the other, the long-term consequences could be serious.

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