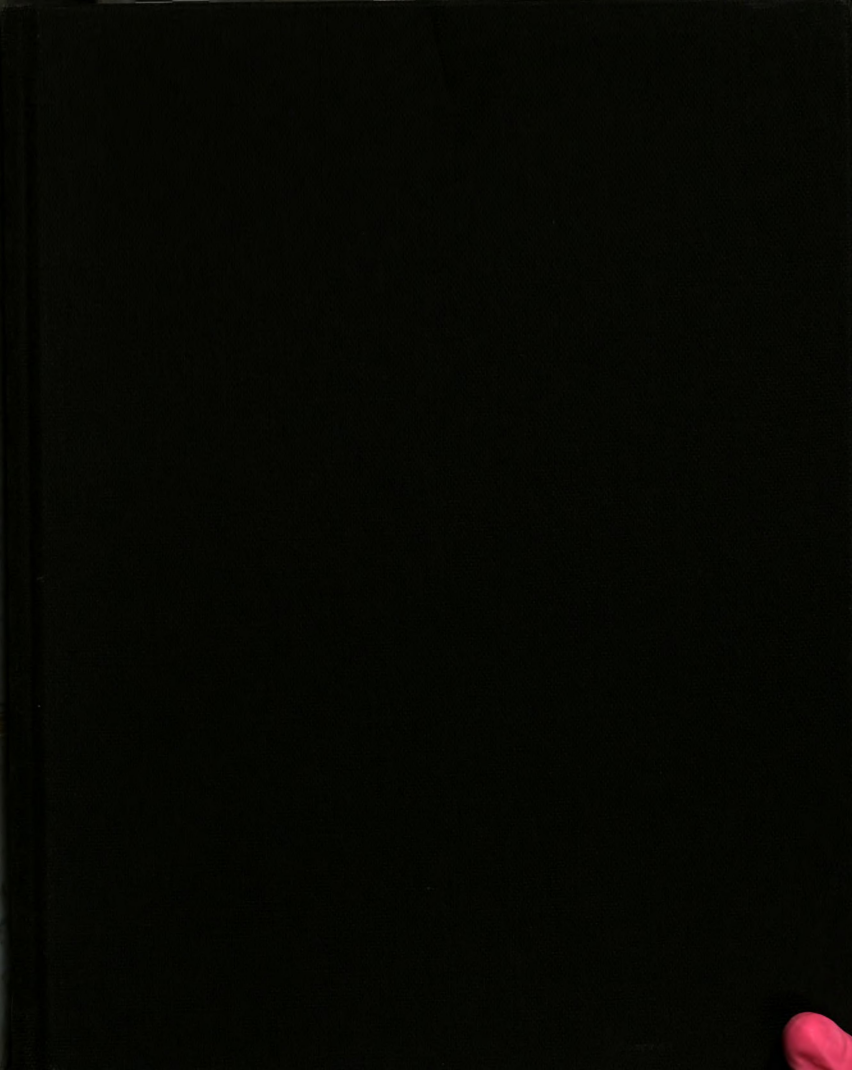






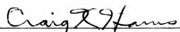
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CATTLE FEEDERS IN TWO ZONES IN MALI

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**FACTORS BEHIND ASSOCIATION FORMATION AMONG ON-FARM  
CATTLE FEEDERS IN TWO ZONES IN MALI**

**by**

**Cheick Kamate**

**A Thesis**

**submitted to**

**Michigan State University**

**in partial fulfillment of the requirements**

**for the degree of**

**MASTER OF ART**

**Department of Sociology**

**1984**

## **ABSTRACT**

### **FACTORS BEHIND ASSOCIATION FORMATION AMONG ON-FARM CATTLE FEEDERS IN TWO ZONES IN MALI**

by

**Cheick Kamate**

The concern of this study is the process of association formation among on-farm cattle feeders in two zones in Mali (West Africa). What factors impede, or enhance the process of association formation among Malian cattle feeders, and what can be done to promote the formation and development of cooperative organizations among cattle feeders in the area of the study?

It has been hypothesized that the likelihood for a cattle feeder to embark on a cooperative organization was related to his age, family size, level of education, cosmopolitanism, business isze, and past experience with cooperation, and to the frequency of contacts with the change agent. These hypotheses have been tested by using data from a sample survey conducted in the cattle feeding zones of Banamba and Segou.

Age of respondent and cosmopolitanism were found to be related to current membership in an association in general, but not to current membership in a cattle feeding association in particular. The hypothesis about education could not be tested because no respondents were educated. Family size and past experience with cooperation were not found to be significantly associated with either kind of membership.

Change agent contact by itself was not significantly related to membership in a cattle feeding association. But business size, whether the agent talked to the respondent about working together, and whether another farmer talked to the respondent about working together, were found to be positively correlated to membership in a cattle feeding association.

To my mother  
Hawa Diallo  
for a better "Mom"  
makes a difference there,  
on the bank of  
The Niger-River

## ACKNOWLEDGEMENT

"Ni i nyinèna i jujon kō  
I laban ko bē i kamana  
gan."

(Bamanan proverb)

According to this common saying in Mali, "He who forgets where he got his first start from, will have trouble getting to an end." Being a Malian, I would not have any excuse to forgetting where I got my

first start from. Thus, I sincerely want to thank my parents, my brothers and sisters, my family, and my relatives, for all they have done and continue doing for me. I want to thank my friends, and Famory Keita, in particular, for I would never have arrived at the decision to leave my family back home, and come to the States to study, if I had little doubt that I could depend on him. I am thankful to officials from I.E.R., O.M.BE.VI, Mali Livestock II Project, and A.I.D./Bamako, for having given me the opportunity to come to M.S.U. to study.

I am grateful to Ousmane Fofana and his team of the Language Training Center in Bamako, Mali, to my instructors from the Economics Institute in Boulder, Colorado, for having given me the tool without which I could not get in my academic program.

I want to thank the faculty members of the Department of Sociology at M.S.U., and of the Institute for Social Research at University of Michigan for their contribution to the widening of my views. In the same vein, I would like to specially thank Professors J. Allan Beegle,

Christopher K. Vanderpool and Nan E. Johnson — who are, all three, members of my Guidance Committee — for their help.

Back at Mali, I would like to thank the officials from Ecibev, AID/Bamako, and "Embouche Paysanne", and their agents in the field in Bouawere, Diouna, and Banamba, for their contribution in the preparation and the conduct of the survey.

My thanks also to Maria Olivia Mejorado for the typing of my thesis.

However, neither my trip to Mali to collect the data, nor the writing of this thesis itself, would have been possible without the actions of Dr. Craig K. Harris, my advisor, and the head of the my Guidance Committee. Thus, I sincerely want to thank him not only for the actions just referred to, but also for his important suggestions and the diligence with which he actually guided my work.

C.T. Kamate

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## CHAPTER 1: INTRODUCTION

While working as a geographer in the socio-economic team of the New-Lands Activity of Mali-Livestock II Project<sup>1</sup> from 1977 to 1981, I had the opportunity to become familiar with a number of problems experienced by rural Mali, mainly because my work consisted essentially of extensive surveys of rural settings in different parts of the country. Since that time, one of the problems I strongly wanted to look into was the consistent decrease in peanut production in some areas of the country and the quasi-failure of the national peanut operation. Two reasons stood for my interest. The first reason was that in my knowledge, there did not exist a piece of sociological work on peanut production in Mali, although this crop was, after cotton, the second most important source of external revenue<sup>2</sup> among cash-crop products in the country. The second reason was that such a study would have made it possible for me to get a basis for some useful comparisons between peanut and cotton which I had already worked on in 1977.<sup>3</sup> But it was not possible to start this project before leaving Mali for the United States. I decided

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<sup>1</sup> Mali-Livestock II Project was a U.S.A.I.D. financed project that comprises different activities such as New Lands Activity, Sahel Grazing Activity, Training and Communication Activity, Language Training Activity, etc.

<sup>2</sup> Mamadou Traore' in "Les Atlas Jeune Afrique": Atlas du Mali, 1980, pp. 34-37.

<sup>3</sup> Cheick Kamate: "L'essor du coton dans la region de Koutiala et son impact sur la ville," 1977, Memoire de fin d'etudes, Ecole Normale Superieure, Bamako.

later to deepen my thinking on the same topic and use it as a master's thesis research topic. But the conduct of this study required that I return to Mali and undertake a survey of Malian peasants involved in the peanut operation, things that could not be dealt with without the agreement of, and support from, U.S. AID/Bamako. In response to Dr. Craig K. Harris, my advisor, request that I be able to go to Mali for a field research, Mr. McCarthy, on behalf of AID/Bamako, suggested an alternative topic which he thought "would be of greater benefit to an ongoing U.S. AID/Mali Project," namely the "On-Farm Cattle Feeding Program."

In Mr. McCarthy's words, "a major area of concern at this time is the ability of farmers participating under the program to organize themselves in some manner in order to take advantage of group efforts regarding loan acquisition, purchase and sale of animals, acquisition of feed supplies, etc. Over the last few years farmers in one area have organized themselves into associations and have clearly been more successful in the program than those operating on an individual basis. Very little is known at this time as to how these associations are formed and structured and what constraints exist in other areas concerning farmer group cooperation and the potential of similar association development..."<sup>4</sup>

As can be seen, the alternative topic proposes both a new area (cattle feeding) and a new theme (cooperation among farmers engaged in the cattle feeding operation) of research. At this point a question that naturally comes is how important the new area and the

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<sup>4</sup> Third paragraph of Mr. McCarthy's letter to Dr. Craig K. Harris.

new theme are. Besides the applied character of the research this topic calls for, is there room for some useful sociological investigation?

To answer the first set of question, it is important to place the cattle feeding program in its broader Malian context.

In the 1974-78 Five-Year Plan, the government of the Republic of Mali (G.R.M.) had explicitly specified its objectives in the livestock sector under four fundamental options. They are: 1) Satisfaction of national needs; 2) Maximization of exports; 3) Maximum valorization of resources; and 4) Progressive realization of the security of the revenue of stock breeders. Under the heading "Maximum valorization of resources", it is reported: "Export of intermediary goods (cotton seeds, cotton seed cake, young and lean animals) constitutes, without any doubt, a running away (from Mali) of the real value of the labor of agricultural producers and of stock breeders. The promotion of on-farm cattle feeding on a vast scale, (and) the creation of cattle feeding stations and ranches, must be very strongly encouraged during the period of the Plan by appropriate measures (subsidies to the price of feed supplements, prohibition of the export of young animals)..."<sup>5</sup> As can be inferred from the above quotation, the on-farm cattle feeding program is an element of a more global strategy devised to induce changes in livestock production practices so as to render this sector more profitable economically both to the individual producer and to the

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<sup>5</sup> Plan Quinquennal 1974-78, Dossier Principal, p. 151.

country as a whole. In 1976, the program started as a branch of ECIBEV,<sup>6</sup> and was assigned specific goals. For example, it was hoped that the on-farm cattle feeding program would act to strengthen the integration of the cropping system and the livestock system at the level of the individual farmer. By providing the latter with an alternative occupation in periods of the year where he usually had almost nothing to do (because of seasonal patterns in agriculture and of the consequent concentration of farming activities in a relatively short period of time), the on-farm cattle feeding program is also thought of as a means of diversifying agricultural activities in the zones of Rural Development Operations,<sup>7</sup> and of increasing rural people's income. Ultimately, by providing Malian peasants with practical advice about cattle feeding, and by supplying them with feed supplements and with adequate veterinary assistance, the program is expected to increase the productivity of livestock in Mali.

These very specific goals assigned to the "Embouche Paysanne"<sup>8</sup> program and the place the livestock sector occupies in the Malian economy as a whole attest that the research area is worth investigating. In effect in 1971, the livestock sector accounted for 20% of the Malian G.N.P., and 50% of total exports. In 1976,

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<sup>6</sup> ECIBEV (Etablissement de Credit et d'Investissement Betail-Viande) is a more complex structure comprising three other activities in addition to on-farm cattle feeding program.

<sup>7</sup> The "Operations de Developpement Rural" in Mali are structures of integrated rural development, each of which focuses in general on one major crop.

<sup>8</sup> French version for "On-Farm Cattle Feeding."

despite the consequences of consecutive years of drought, the livestock sector accounted for 31% of the total value of exports.<sup>9</sup>

Elsewhere in the main document of the Plan (pp. 245-46), the Malian government puts the emphasis on the cooperative movement which is referred to as "the fundamental option in the domain of the structuring of rural world...(and) the unique solution" to a number of problems present in Malian agriculture. According to the Malian government, the cooperative organizations will be reoriented so to become the ideal frame for the implementation of programs intended to bring about social and economic changes among rural people.

This unambiguously shows the interest the Malian government attaches to cooperation and to cooperative organizations as a means for achieving participatory development programs in rural areas in Mali. It also helps to understand why a program like the "Sedentary Farmer Livestock Feeding Project"<sup>10</sup> concerns itself with getting a grounded understanding of the cooperation pattern among its peasant-partners, and with finding a way of developing association in its areas of intervention. In effect, the on-farm cattle feeding associations are thought of as appropriate structures that will provide the cattle feeder with a means to organize themselves and deal together with aspects of their business such as credit, purchase of feeder cattle, marketing and sale, etc... It appears therefore that the alternative topic is not only important at the national level, but it constitutes an area of priority for research.

With regard to the second set of questions, "the ability of

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<sup>9</sup> Christopher Granier in "Atlas Jeune Afrique: Atlas du Mali, 1980, p. 39.

<sup>10</sup> Larry Harms, 1978.

farmers to organize themselves in some manner in order to take advantage of group efforts..." is a sociological topic of long standing. In particular an investigation of factors that lie behind one's decision to engage or not in cooperative action and/or organization has always given birth to renewed attention among researchers from varied areas of sociology. For example, the shift of farmers' organizations from informal to highly institutionalized structures may lead, on a sociological ground, to consider these organizations whether as voluntary association or as social system, each of which presents important characteristics to study. Thus, the power structure of agricultural cooperatives, the study of competing value systems, of problem solving and social action, to cite but a few, are of interest to sociologists.

Because of so many reasons, I decided to lay to rest my research project on peanuts and to embark on this study of association formation among on-farm cattle feeders in Mali. More precisely, the study will cover two zones: the zone of Segou and the zone of Banamba. In terms of research objectives, an attempt will be made to get an understanding of factors that oppose to the formation of associations among on-farm cattle feeders in the zone of Segou, and to present and describe an example of "successful" association in the zone of Banamba. The study will also try to determine the potential that exists for the development of similar association in other areas in the two zones. Finally, some recommendations will be formulated as what can be done to enhance association formation in the two zones.

## CHAPTER 2: LITERATURE REVIEW

The concern of this study is, as stated earlier, the process of association formation among on-farm cattle feeders in two zones in Mali. In other words, what factors impede the process of association formation among on-farm cattle feeders in Mali? What types of cooperative organization exist presently? How are they formed? What are their shortcomings, if any? What can be done to promote the formation and development of cooperative associations among cattle feeders in the zones of Segou and Banamba?

Before getting in the Malian case, it may be useful to dwell a bit on some general considerations about cooperation in rural areas, and as they have been addressed in the literature. In effect it seems important to elucidate certain notions so as to make it clear what meanings are attached to the fundamental concept of cooperation on one hand, and what critical variables are at stake in analyzing one's decision to engage or to not engage in cooperative action on the other hand.

### Definitions and types of cooperation in rural areas:

According to Samiuddin,<sup>11</sup> cooperation literally means working together, "acting together to accomplish the common goal through cooperative principles." Although such a definition has the merit of being terse, it actually does not explain the keyword, and it is still correct to ask the question as what is meant by "cooperative principles." This example shows the danger that exists in

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<sup>11</sup> Samiuddin, 1972, p. 44.

attempting to define a complex concept by using a concise formula. In addition to that, there is the fact that numerous definitions of cooperation have been proposed in the literature, depending on the countries, and more precisely on the specific objectives the policy makers in these countries are pursuing in implementing and developing cooperative structures in their rural areas. For example in Japan,<sup>12</sup> the focus is put on the legal character of cooperative society and on the necessity for the member to be of modest means. British Columbia emphasizes the provision for securing to all members "a share in the profit of the association in proportion to the value of the produce supplied by them." Other attributes frequently stressed in the definition of cooperation are the absence of predetermined limit to the number of members (case in Rumania, Swiss, Austria, Belgium, and etc.), the members' willingness to carry on joint work, and the bettering of the economic prosperity of the members. Quite often, rather than one single attribute, a combination of more than two attributes is likely to be used. As an example, in Germany, the emphasis is put on a) an open membership, b) the furtherance of the commercial interests of members, c) by means of a common business undertaking. Very interestingly, this diversity far from constituting an obstacle toward reaching a consensus about the key-characteristics of cooperation, has, to a great extent, made possible the discovery of a number of attributes that are referred to as principles of cooperation. In this way, the principles put to work in a given country serve to characterize

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<sup>12</sup> This example and the examples that follow are pulled from Samiuddin, 1972, pp. 45-46.

cooperation in this country. Samiuddin identifies eight such principles, whereas Fred Abbotts finds six, and the Bangladesh Academy for rural development concerns itself with only three principles, as presented in Table 2-1. One first observation from this table is that all three sources share some fundamental principles such as the principle of voluntary association or participation, and the principle of democratic decision-making. In effect the principle of equality mentioned by Fred Abbotts is meant to include both voluntary association and open door policy called for by Samiuddin. In Fred Abbotts' terms, "there can be no cooperation unless it is between equals and the principle variously described as open or voluntary membership is a declaration of this equality." Similarly, the principle of publicity in Samiuddin's paradigm is nothing but the equivalent of what Abbotts refers to as education. For both, this principle aims at securing "intelligent participation" of "informed" members in the working of their association.

(Table 2-1 about here)

Aside from these definitional aspects is also the question of how some of these principles actually work in a real life situation. For example, the principle of neutrality according to which "the cooperative movement should remain above party politics" may not have too much a significance in countries where there exists only

**Table 2-1. Principles of cooperation according to three sources.**

| Samiuddin <sup>13</sup>       | Bangladesh Academy<br>for rural develop-<br>ment <sup>15</sup> | Fred Abbotts <sup>14</sup>                |
|-------------------------------|----------------------------------------------------------------|-------------------------------------------|
| 1. Voluntary associa-<br>tion | 1. Voluntary partici-<br>pation                                | 1. Equality                               |
| 2. Democratic manage-<br>ment | 2. Democratic decision<br>making                               | 2. Cooperative<br>democracy               |
| 3. Self-help/mutual<br>help   | 3. Self-reliance                                               | 3. Limited rate<br>of interest,<br>if any |
| 4. No profit motive           |                                                                | 4. Dividend on<br>purchases               |
| 5. Open door policy           |                                                                | 5. Education                              |
| 6. Publicity                  |                                                                | 6. Cooperation<br>of coopera-<br>tives    |
| 7. Neutrality                 |                                                                |                                           |
| 8. Equity                     |                                                                |                                           |

<sup>13</sup> Samiuddin, 1972, pp. 47-52.

<sup>14</sup> A report on cooperative farming seminar held at Bard from April 24-26, 1972, p. 16.

<sup>15</sup> Cooperative College Papers Number Thirteen, June, 1967, pp. 7-16.

one political party, and where the leaders of that party are those to decide which principles are worth adopting. In the same way, the principle of "equality" is questionable insofar as in most cases -- if not all cases -- members of an association may have different levels of income. Thus juridical equality does not necessarily imply economic equality. With regard to the "open door policy" principle, it does by no means insure that anybody willing to join the association can do so, simply because other criteria (mainly economic criteria) may exist that prevent a willing candidate from being a member of the association.

In terms of types of cooperation, different typologies have been proposed, depending on whether the researcher concerns himself/herself with the juridical aspects of cooperation, its economic aims, or any specific goals an association stands for. However, despite this methodological partition, there exists some degree of interconnectedness among the components of different typologies as exemplified in Table 2.2.

(Table 2.2 about here)

According to T. Lynn Smith,<sup>16</sup> non-contractual type of cooperation refers to mutual-aid practices that take place between neighbors without any contractual agreement about "the mode, method, time, or amount of payment." This form of cooperation has become a pattern of rural culture within social grouping where people know each other, and engage in day-to-day interrelationships.

---

<sup>16</sup>

The Sociology of Rural Life, 1953, pp. 525-26.

**Table 2.2. Three classifications of cooperation and cooperative associations and their interconnectedness.**

| T. Lynn Smith's Typology          | E.W. Hassinger's<br>Classification                                    | Kolb and Brunner's<br>Typology                                                                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Non-contractual<br>cooperation |                                                                       |                                                                                                                                                                  |
| 2. Contractual<br>cooperation     | 1. Expressive asso-<br>tations<br><br>2. Instrumental<br>associations | 1. Production<br>cooperatives<br><br>2. Marketing and<br>purchasing<br>cooperatives<br><br>3. Financing<br>cooperatives<br><br>4. Public service<br>cooperatives |

"When the neighbor becomes the one living near and nothing more, cooperation to be successful must be of a contractual nature." In contrast to non-contractual cooperation, contractual cooperation is neither spontaneous, nor may it be necessarily limited to a small group. It operates by means of specified rules and "upon a strict give-and-take basis."

Besides the typology proposed by Smith is the classification by Hassinger.<sup>17</sup> This classification distinguishes between "expressive associations" oriented toward the personal and social satisfaction of their members, and "instrumental associations" which engage in exchange relationships with other groups or institutions for the benefit of their members. As can be noted, both types of associations emerge from contractual cooperation.

One third typology is the classification given by J.H. Kolb and Edmund de S. Brunner.<sup>18</sup> This typology based on the kind of activity performed by the cooperative organization makes the distinction between cooperatives created for the purpose of production, those dealing with the marketing and purchasing of products, the financing cooperatives, and finally the public service cooperatives. Here also, these four types of cooperatives enter in the earlier category of instrumental associations.

In summary, cooperation is multiform. It manifests itself strongly in the economic sphere. It sometimes appears as a culture pattern, mainly under its non-contractual form. More often,

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<sup>17</sup> The Rural Component of American Society, 1978, p. 221.

<sup>18</sup> A Study of Rural Society, 1946, pp. 167-68.

Factors Behind Participation. Although the definitional and typological aspects of cooperation merit attention, it is factors behind participation that are of crucial importance in an attempt to understand people's decision to engage or not in cooperative activity, and to become or not a member of a cooperative association.

In the current literature in the field of participatory research, social scientists have identified a number of variables that ought to be critically related to participation. Also this section is intended to review some of this existing literature in order to provide the present study with a basis for both a conceptual and theoretical framework.

In "Value Orientations and Behavioral Correlates of Members in Purchasing Cooperatives," Emory J. Brown and Robert C. Bealer hypothesize that "members value the cooperative organization primarily as an economic institution and minimize the ideological elements, and differential value orientations are correlated with differential behavior, so that those members whose values are most in agreement with the public goals of the cooperative -- the ideological and the economic -- will be more effective than those members who value only the economic goals."<sup>19</sup>

According to the authors, value orientation refers to the meaning the member ascribes to the cooperative, on the basis of that member's system of beliefs and values which itself is determined

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<sup>19</sup> Rural Sociology, Vol. 22, No. 1, 1957, p. 51.

primarily by past experiences in the family, the peer group, and the occupational group.

In measuring the reasons for joining the cooperative, and the benefits derived from it, they make use of eight variables (good buy, location, variety, principles, treatment, part ownership, friends, and services). In this way, six value orientation groupings were found which differed significantly on satisfaction with cooperative. They are: ideological grouping, treatment non-social grouping, economic treatment grouping, economic non-social grouping, friends grouping, and finally universal grouping.

With regard to the findings, the members who had an image of their cooperative in terms of basic cooperative principles were found to be more effective. In addition, farmers who believed in the cooperative ideology were generally of high socio-economic status. It can therefore be inferred that high socio-economic status farmers were found to be more effective in purchasing cooperative, the socioeconomic status being implicitly measured in terms of level of education and of income.

On the basis of past studies, Brown has also hypothesized a positive relationship between an individual's participation in formal organizations and his participation in informal activities. In other words, "active and inactive participants (in formal organizations) exhibit corresponding behavior patterns with regard to informal activities."<sup>20</sup> He notes that Duncan and Artis

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<sup>20</sup> Rural Sociology, Vol. 19, 1954, p. 366.

reported that "individuals who participated to a high degree in one type were found likely to do so also in the other type." This is important in that it does not indicate a one-way relationship. Rather it appears that informal participation may serve to predict formal participation as well as the latter may be a predictor of the first. The types of informal activities Brown used were visiting, movies, dances, parties, sports activities, and etc. Respondents were asked to indicate the number of times they engaged in eighteen such activities in the twelve months preceding the interview. The result was that "in all types of informal activities included in this study, the high formal participants took part more extensively and more intensively than the low formal participants." However, this study by Brown presents some shortcomings. First, it is difficult for an individual to remember the number of times he or she engaged in various kinds of activities in the twelve months preceding the interview, and the more the number of times, the greater the chances are to give a wrong statement in the absence of record. Second, this difficulty is aggravated by the great number of activities. Therefore, a lengthy interval and a great number of activities may have caused the respondents to give answers that are not always reliable. This observation, however, does not invalidate the study. Rather it is likely that high formal participants underscore the number of times they engaged in informal activities, this suggesting a stronger relationship.

Another study dealing with farmers' participation in cooperative activities is an article by Ruth Gasson<sup>21</sup> "who applied a

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<sup>21</sup> Sociologia Ruralis, Vol. 17, 112, 1977, pp. 107-122.

social psychological approach to the analysis of farmers' participation." In the introductory section of her study, Gasson reports that "participation" is usually treated as the dependent variable to be explained in terms of characteristics of the members. These characteristics are objective, background factors on one hand (economic, social, and psychological characteristics, for example), and subjective, attitudinal factors on the other hand (beliefs, values, and perception of cooperation). She further reports that use of cooperative or patronage, office holding, attendance at meetings, talking favourably about the cooperative, trying to recruit new members, and frequency of "shopping around" before dealing through the cooperative, are usual measures of participation. Ruth Gasson thinks, however, that a distinction should be made between these measures, and suggests that participation be treated not as a single variable, for participation embeds membership, patronage, involvement in the running of the cooperative, or support to the organization, all variables that are not necessarily linked.

From Gasson's point of view, it is reasonable to expect participation in a cooperative to be affected by certain background characteristics of the farmer. She identifies "farm size" as an obvious variable linked to other status variables such as level of income, education, and work role. Then, dividing participation into components like patronage, support, membership, and informal cooperation, she conducts her own survey in two different cooperatives. Her findings are as follows:

- Cognitive variables (beliefs, expectations, attitudes and opinions about cooperation) are found to be more powerful predictors than background characteristics;
- Measures of farm size (and of business size in general), related to socioeconomic status, are found to be better predictors of support and membership than they are predictors of patronage.

Another dimension of the problem has been explored by Olson,<sup>22</sup> not in terms of participation at the level of an individual, but in terms of group behavior, and as a contribution to the theory of group and of collective action.

In his book, Olson rejects the view according to which "if the members of some group have a common interest or objective, and if they would all be better off if that objective were achieved, it follows logically that the individuals in that group would, if they were rational and self-interested, act to achieve that objective." Olson goes on and adds that "unless the number of individuals in a group is quite small, or unless there is coercion or some other special device to make individuals act in their common interests, rational, self-interested individuals will not act to achieve their common or group interests." To put it differently, group size and incentive offer are crucial variables in the prediction of the likelihood for individuals in a group to act to achieve a common goal.

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<sup>22</sup> Olson, Mancur. The Logic of Collective Action, Public Goods and the Theory of Groups, 1971.

In his paradigm, Olson compares the combination of individual interests and common interests in an organization to the situation in a competitive market where, "while all firms have a common interest in a higher price, they have antagonistic interests where output is concerned. Though all firms have a common interest in a higher price for the industry's product, it is in the interest of each firm that the other firms pay the cost -- in terms of the necessary reduction in output -- needed to obtain a higher price."<sup>23</sup> And it would not be rational for a producer to restrict his output in order to get a higher price for a product of his industry. Analogously, "it would not be rational for him to sacrifice his time and money to support a lobbying organization to obtain government assistance for the industry."<sup>24</sup> In the same line of reasoning, the author makes the firm statement that any organization working in the interest of large groups (be it a group of firms or of workers) would get no assistance from the rational, self-interested individuals in that industry. Moreover, in a large organization, "the loss of one dues payer will not noticeably increase the burden for any other dues payer, and so a rational person would not believe that if he were to withdraw from an organization he would drive others to do so." Olson also thinks that voluntary dues or contributions are inadequate to support any organization conveniently, "so that large organizations that are not able to make membership compulsory must provide some non-collective goods in order to give potential members an incentive to join."

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<sup>23</sup> Ibid, p. 9.

<sup>24</sup> Ibid, p. 11.

In contrast to large groups, small groups can, according to Olson, provide themselves with collective goods without recourse to coercion or some positive inducement, because in a small group it is likely that at least one member will find that "his personal gain from having the collective good exceeds the total cost of providing some amount of that collective good." However, this situation in turn makes small groups with common interests exhibit accordingly a "surprising tendency for the 'exploitation' of the great by the small."

Although Olson's model very interestingly points to aspects of participation that need more attention and investigation, it presents a number of shortcomings. On a purely theoretical ground it would be justified to raise the question of conceptual definitions. In effect it seems that the author takes for granted the meaning of certain expressions that need elaborated definitions. This is the case with Olson's notion of "rational individual". Even assuming that an agreement is reached on the meaning of "rational individual", the model not only suggests enormous difficulties to bring individuals of a large group to act to achieve a common objective, but it simply shows that this is impossible to accomplish when everybody in a group is rational. For by virtue of being rational, and by behaving as such, everybody will decide to withdraw, keeping in mind that "if he were to withdraw from the organization," he would not drive others to do so.

With regard to the size of a group, although Olson reports several examples where other researchers define what they refer to

as "small," "action-taking" groups,<sup>25</sup> he himself does not systematically address the problem of the dividing line between large groups and small groups.

The model undoubtedly leaves unanswered questions. In spite of that, it usefully draws the reader's attention on a new dimension of participation, namely the relationship between group size and group behavior. In relation to that, Olson successfully underlines the free rider problem<sup>26</sup> associated with the pursuit of common interest objectives.

In addition to all the factors already examined, there is another element which has been sufficiently stressed in the literature dealing with the process of diffusion of innovations in rural areas, that is the change agent and his/her roles. Change agents, explains Rogers, are all those agents who "provide a communication link between a resource system of some kind (commonly called a change agency) and a client system."<sup>27</sup>

As shown in Figure 2-1, the change agent conveys the flow of innovations from the change agency to the client system, and passes feedback from the latter on to the first. A number of factors thought of as crucial to the success of the change agent are summarized in Table 2-3, as they have been presented by Rogers.

(Figure 2-1 and Table 2-3 about here)

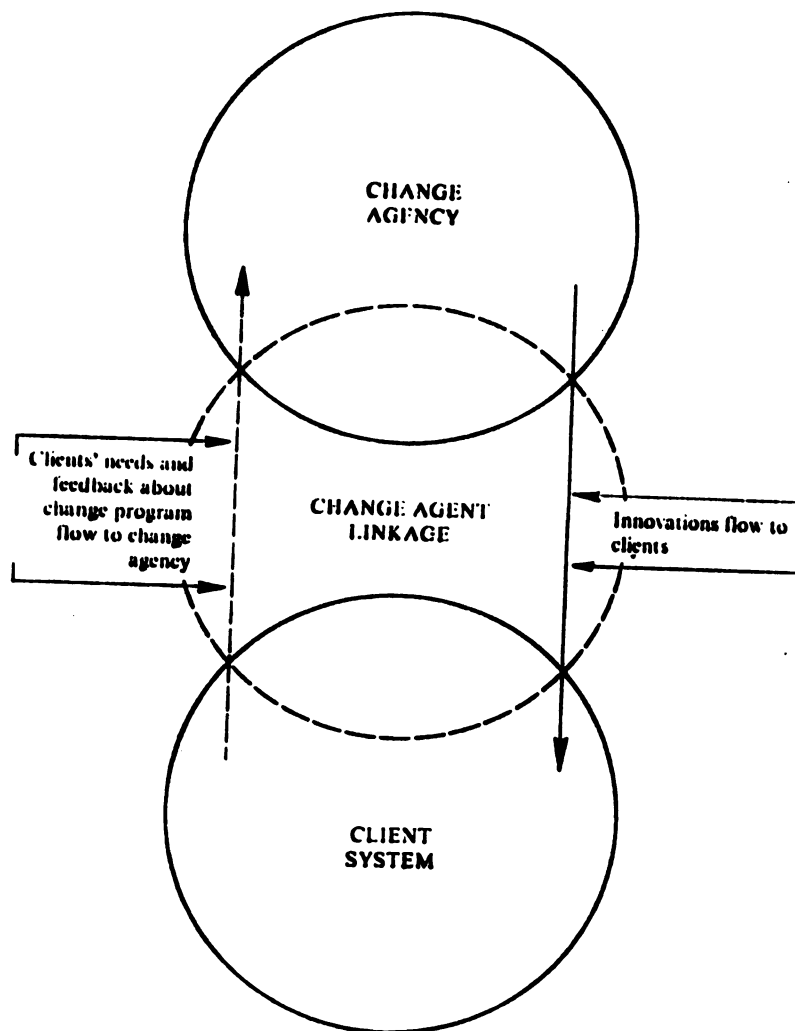
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<sup>25</sup> Ibid, p. 54.

<sup>26</sup> Ibid, p. 35.

<sup>27</sup> Everett M. Rogers. Diffusion of Innovations, 1983, p. 313.

Figure 2-1: The Change Agent as a Link Between the Change Agency and the Client System. (Source: Everett M. Rogers, 1983, p. 314).



| Generalizations                                                                                                               | Support (or absence of support) for the Generalization    |                                 | Percentage of research studies supporting the generalization |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------|--------------------------------------------------------------|
|                                                                                                                               | Research studies supporting                               | Research studies not supporting |                                                              |
| 1. Change agent success is positively related to the extent of change agent effort in contacting clients.                     | 16                                                        | 3                               | 84%                                                          |
| 2. Change agent success is positively related to a client orientation rather than to a change-agency orientation              | 6                                                         | 0                               | 100%                                                         |
| 3. Change agent success is positively related to the degree to which the diffusion program is compatible with clients' needs. | 10                                                        | 0                               | 100%                                                         |
| 4. Change agent success is positively related to empathy with clients.                                                        | (There are no findings available on this generalization). |                                 |                                                              |
| 5. Change agent contact is positive-related to higher social status among clients.                                            | 37                                                        | 6                               | 86%                                                          |
| 6. Change agent contact is positively related to greater social participation among clients.                                  | 18                                                        | 2                               | 90%                                                          |
| 7. Change agent contact is positively related to higher education among clients.                                              | 32                                                        | 11                              | 74%                                                          |
| 8. Change agent contact is positively related to cosmopolitanness among clients.                                              | 5                                                         | 0                               | 100%                                                         |
| 9. Change agent success is positively related to homophily with clients.                                                      | 2                                                         | 0                               | 100%                                                         |
| 10. Change agent success is positively related to credibility in the client's eyes.                                           | 1                                                         | 0                               | 100%                                                         |
| 11. Change agent success is positively related to the extent that he or she works through opinion leaders.                    | 3                                                         | 0                               | 100%                                                         |
| 12. Change agent success is positively related to increasing clients' ability to evaluate innovations.                        | 4                                                         | 0                               | 100%                                                         |

Despite the shortcoming inherent to "the oversimplification of two-concept generalizations" which the author himself gives some explanation about,<sup>28</sup> and despite the fact the number of research studies in support of certain generalizations is very few (examples are generalizations 9, 10, and even 11), the summary table by Rogers remains a useful handrail in a search for variables that may be relevant to a study of change agent contacts with clients.

In summary, a great number of variables are at play that may operate whether directly or indirectly, negatively or positively, to make one decide to join a cooperative organization. Some of these variables, and precisely those which are repeatedly stressed in the current literature have been reviewed in this section. A more concise presentation of these variables is attempted in Table 2-4. It is from this table that the case study which will be presented in the remaining chapters, will select the basic ingredients for its hypotheses.

(Table 2-4 about here)

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<sup>28</sup> Everett M. Rogers, 1983, pp. 130-31.

**Table 2-4: A Summary of Variables in Participatory Research.**

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1. **Socio-economic Status:** Farm or business size, level of income, education, work role, cosmopolitaness.
  2. **Informal Participation:** Movies, sports, dances, parties, etc.
  3. **Participation:** Membership, patronage or use of cooperative services, informal cooperation, support to cooperative organization.
  4. **Subjective Factors:** Beliefs, expectations, perception of cooperation, attitudes toward cooperation.
  5. **Change Agent:** Frequency of contacts, empathy with clients, social participation, homophily, credibility, use of opinion leaders, etc.
-

### CHAPTER 3: RESEARCH HYPOTHESES AND METHODOLOGY

Hypotheses and Variables: Previous studies have focused on factors that lead an individual to participate in an existing cooperative. In the case of Malian farmers, it may be useful to ask the question whether the factors that lead one to join an existing association, also lead a farmer to form a new association. It seems that, even though linkages do exist between the two situations, and even though factors that help to predict one situation, may help in the other, there may be a great deal of difference in the ordering of variables with regard to their relative importance in one situation or the other. To make it clear, the formation of a new cooperative association practically involves all the steps depicted by Rogers in the innovation-decision process, namely a knowledge stage, a persuasion stage, a decision stage, followed by implementation and confirmation.<sup>29</sup> Needless to say that in a situation like that, all the variables related to "change agent success" will rank as of crucial importance.

This is not to say that cooperative organizations do not exist in the "Embouche Paysanne" zones. But a cooperative structure dealing with cattle feeding related problems is, in a sense, a newborn enterprise in the zone of Banamba, and has only been tried in the zone of Segou.

Moreover, instead of participation in general, this study will emphasize initiation, or -- to be more precise -- the likelihood

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<sup>29</sup> Everett M. Rogers, 1983, pp. 165-209.

for a cattle feeder to embark on an association dealing with cattle feeding business. It will be contended that the likelihood for a cattle feeder to embark on cooperative association is related to 1) the size of the cattle feeding business of the farmer, 2) the network of communication between the change agent and the farmers on one hand, and among farmers themselves on the other hand, 3) whether or not the agent exposes his clients (the farmers) to ideas of group efforts, 4) the individual farmer's past experience with cooperation and the importance of cooperation in traditional agriculture, 5) the farmer's value orientation toward cooperative organization and cultural and personality factors, and 6) the individual farmer's receptiveness.

With regard to the first set of relationship, the assumption is that business size by itself works as a stimulus to motivate the farmer to engage in initiatives that make the business more profitable. Business size is also an indirect indicator of socio-economic status, and higher socio-economic status farmers are expected to become early members of cooperative organizations, because if they don't, some lower status individuals will take on leadership roles in the association.

The network of communication between the change agent and the farmers is crucial for the beginning of every innovation. Because of such contacts the agent is likely to find appropriate occasions to talk about group action and its relevance to cattle feeding business. The perception the farmers can have of the change agent and of his/her role, is built on the basis of such communication. The same could be said of farmer's perception of the cattle feeding

activity. It goes without saying that these two kinds of perception in turn, correlate with the farmer's likelihood to join a cooperative association whose very purpose is to help cattle feeders.

In an area where cooperation is deeply integrated in the tradition, and has become a culture pattern, it may be quite easy to make people join a cooperative organization, as compared to an environment where such cultural pattern is missing.<sup>30</sup>

With regard to value orientation toward cooperative organization, what is meant is the individual farmer's perception of cooperation, as a result of this farmer's personal history, and of his past experience with cooperation.

By receptiveness, I intend to mean the degree to which a given farmer is permeable to new ideas. This attribute is assumed to be directly related to both education and to cosmopolitaness.

Therefore, in an analysis of the phenomenon under consideration, there is a complex inter-weaving of variables. It is beyond the scope of this study to investigate meaningfully all the variables that are otherwise important and their interrelationships. Tentatively, however, a number of variables have been selected for this study and present themselves as follow:

- 1) Dependent variable: likelihood to join a cooperative.
- 2) Intermediate variables: socio-economic status, perception of cooperation,

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<sup>30</sup> An interesting description of cooperation as a culture pattern initially reported by Hoffer, is revisited by T. Lynn Smith in "The Sociology of Rural Life," Third Edition, 1953, pp. 336-37.

perception of change agent and of his role, and receptiveness.

- 3) Independent variables: Family size, respondent's age, education, cosmopolitaness, business size, past experience with cooperation, and change agent contacts.

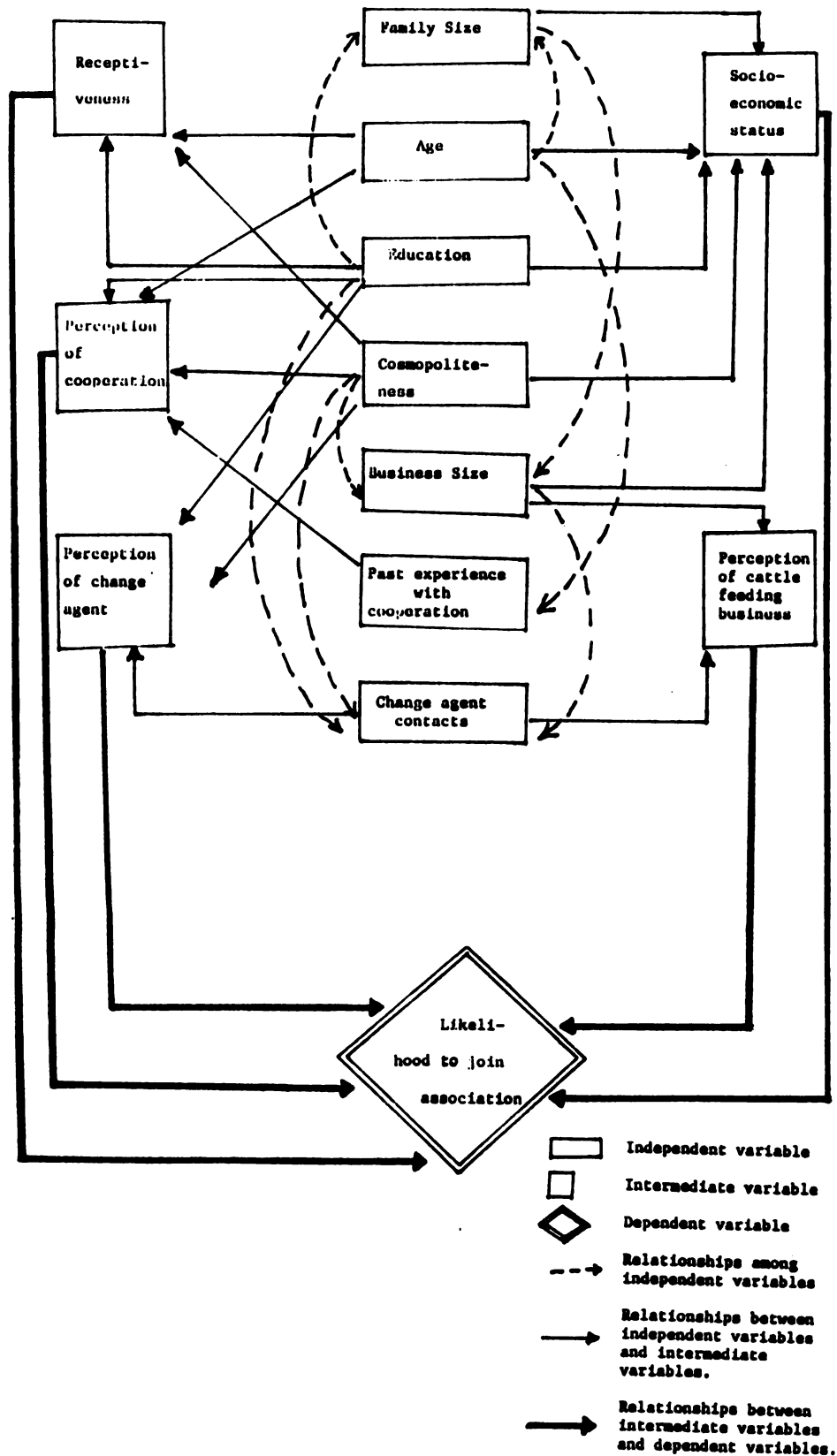
The relationships among these different variables are schematized in Figure 3-1.

(Figure 3-1 about here)

The writer is, however, aware of the fact that the direction of these relationships could be changed, depending on the interests of the researcher, that the list of the variables used could be longer (or may be shorter) and that a variable considered here as independent could well be an intermediate variable in another model, and vice versa.

Finally, in the light of all the assumptions called for in the preceding paragraphs, and of the relationships presumed, the major hypotheses of this study are as follows:

Figure 3-1: Theoretical Scheme of the Relationships Among Variables  
in the Likelihood for a Farmer to Cooperate Formally.



- 1) The larger the family size of any individual farmer, the higher his socio-economic status, and the more likely that this individual farmer will engage in a cooperative association having to do with his business.
- 2) The older a cattle feeder, the higher his socio-economic status, the broader his views, and the more likely that this individual cattle feeder will be a member of a cooperative organization dealing with cattle feeding related matters.
- 3) The more educated a farmer (in the sense of formal education in "French School", or education received in a "Franco-Arabic School" also referred to as "Madersa School", or non-formal education received from "Alphabetisation Fonctionnelle"), the higher his socio-economic status, the broader his views, the more favourable his perception of cooperation and of change agent, and the more likely that this farmer will embark on a cooperative enterprise whose aim is to help the farmers.
- 4) The more cosmopolitan a farmer (in the sense of having travelled a lot, and spent a relatively long period of time abroad), the higher his socio-economic status, the more favourable his perception of cooperation, and of change

agent, and the more likely that this farmer will be a member of a cooperative organization having to do with farm business.

- 5) The larger the business size of any individual cattle feeder, the higher his socio-economic status, the greater the likelihood that he will have a favourable perception of the cattle feeding activity, and the likely that this individual cattle feeder will be a member of a cooperative organization designed to meet certain needs of the cattle feeding business.
- 6) The more a farmer has favourable impressions of cooperation on the basis of his past experience, the more likely that he will continue perceiving cooperation favourably, and the more likely that this farmer will embark on farmers' association.
- 7) The higher the level of frequency of contacts between the Ecibev agent operating in the field and any individual farmer, the more likely that the agent will find appropriate occasions to give a good image of himself, to build credibility, and to influence in the positive direction the perception this farmer has of the cattle feeding activity, and the more likely that this individual cattle feeder will be a member of a cooperative association having to do with on-farm cattle feeding business.

Operationally, however, the analysis will consist of a cross-examination of the relationship between each independent variable and the dependent variable. Thus, although family size, age, education, cosmopolitaness, business size, past experience with cooperation, and change agent contacts are viewed as working through socio economic status, perception of cattle feeding business, perception of change agent, perception of cooperation, and receptiveness, they will be directly analyzed in their relationships with the respondent's likelihood to join the association.

These theoretical considerations aside, it is important to explore some methodological issues and to answer some questions relative to the details of the study.

Research Methodology: This study of association formation among on-farm cattle feeders in Mali consists essentially of a presentation and analysis of data obtained from a sample survey conducted in the two zones of Segou and of Banamba during the month of March and the beginning of April, 1984. It was the feeling of the writer that, to obtain samples representative enough of, and data generalizable to, each of these two zones, the survey method was the most appropriate method of research. As pointed out by Jackson, Tucker, and Bowman,<sup>31</sup> "other commonly used research methods such as participant observation, field studies, and laboratory experiments, are limited to the study of rather small, select groups of people." These other methods do not allow for generalizability,

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<sup>31</sup> James S. Jackson, M. Belinda Tucker, and Phillip J. Bowman. Conceptual and Methodological Problems in Survey Research on Black Americans, pp. 12-13.

and therefore they could not meet the objectives of this study. However, the time constraint<sup>32</sup> aside, participant observation could have been very usefully combined with the sample survey to get a deeper understanding of certain behavioral patterns.

In terms of sampling procedure, use has been made of stratified simple random sampling. The need for stratification was dictated by two concerns. On one hand, the two zones covered by the survey were presumed to be fundamentally different in terms of cattle feeders behaviour with regard to association formation. On the other hand, the sponsor of the study had manifested a strong interest in a design that would particularly put the focus on the zone of Segou. Thus, in the zone of Segou, the two existing subzones of Katiena/Bouawere and Diouna were included in the study, whereas in the Banamba zone, only one subzone out of seven (the subzone of Banamba) was investigated. For each subzone, a list of villages was generated, and the percentage number of cattle feeders in each village determined. On the basis of this relative importance, a sample of villages was drawn for each subzone. In this way, seven villages were surveyed in the subzone of Bouawere, six in the subzone of Diouna, and five in the subzone of Banamba.<sup>33</sup> Finally, in each sampled village, from two to four respondents were selected among eligible cattle feeders. For a respondent to be eligible, he must satisfy the following criteria:

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<sup>32</sup> The survey had to be completed in less than two months.

<sup>33</sup> The initial objective was to survey the same number of villages, or at least of respondents in each zone. But insufficient time played against this objective.

- 1) be an active operator<sup>34</sup> in the cattle feeding program at the moment of the survey;
- 2) have participated in the project for two years or more;<sup>35</sup> and
- 3) be a farmer with a number of feeder cattle corresponding to the statistical mode prevailing in a village.

In so doing, and by observing a sampling interval of 2 or 3 units for each village, a total of fifty-eight farmers were brought in the study, that is twenty-four cases in the subzones of Bouawere, twenty-two in that of Diouna, and twelve in the subzone of Banamba, representing respectively about 22%, 21%, and 8% of the population of cattle feeders in the three subzones. This obviously shows an underrepresentation of Banamba at the level of the aggregated data on one hand, and furthermore, poses the problem of generalizability at both the subzone and the zone levels on the other hand since fewer villages (and only villages in the vicinity of Banamba) were brought in the study. It may be that differentials in behaviour exist, depending on geographical location, and on the effects of

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<sup>34</sup> The concept of "active operator" was used in order to distinguish cattle feeders regularly registered prior to the year of the survey, and actually feeding cattle at the moment of the survey, from other farmers also regularly registered as cattle feeders prior to the year of the survey, but not feeding any cattle at the moment of the survey either because they had for some time withdrawn from the project, or because they could not find feeder cattle.

<sup>35</sup> This criterion was dictated by the fact that a respondent with less than two years of participation would not have been in a position to answer an important number of questions in the interview.

such location on the flow of supplies and of communication. Finally all the respondents were males since Ecibev does not deal with females in the cattle feeding business.

With regard to data collection procedures, neither the telephone interview, nor the mail-questionnaire, are appropriate in the context of a country like Mali where the network of telephone communication is centered on administrative offices, and where ninety percent (it may be much more in rural areas) of the adult population are illiterate.<sup>36</sup> Therefore, the only alternative at hand when conducting this survey was the face-to-face interview.

The first draft of the questionnaire was written before any contacts with the concrete field situation could take place. By the help of the exploratory survey in the two zones, of exchange of viewpoints with officials from Ombevi, Ecibev and AID/Bamako, and by the means of free and rather informal talks with the agents in the field, the questionnaire was revised and completed. In its completed version, the questionnaire was intended to inquire about a wide variety of items, among which are farm size, ownership of land, cattle feeding business size, farmer's perception of the cattle feeding business, the problems they encounter, the solutions they propose, the level of frequency of contacts between the change agent and the farmer, whether or not the change agent talked to the farmer about group action, farmer's perception of cooperation, his past experience with cooperative organizations, his marital status, his family size, his cosmopolitaness, and etc.

The exploratory survey in Banamba took place a week after the

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<sup>36</sup> Soumana Doumbia, in "Les Atlas Jeune Afrique," Atlas du Mali, 1980, p. 49.

one in Segou. Thus, it could be, and was, used to pretest the questionnaire. In its final form, the questionnaire combined open-ended, close-ended, and answer structured types of questions. Every attempt was made to insure clarity, reality, unidimensionality, and completeness. Special attention was paid to cultural sensitivity and to measurement and conceptual equivalence. For example, the "most beneficial crop" can refer conceptually to the crop that either is of high nutritional value, or has a high market price; but from the standpoint of Malian farmers affected by lengthy years of continuous drought, the "most beneficial crop" is neither the most nutritious, nor the most profitable crop, but the crop that can cope with insufficient rains, and provide them with something to feed themselves and the members of their households. No interviewers were recruited. I decided to get in the field myself and administer the questionnaire to all the respondents.

In addition to this formal interview, an informal, in-depth interview was conducted in a different manner. No questionnaire was prepared in advance for this interview. However, for every session with an informal interviewee, a detailed agenda comprising specific problems which the formal interview could not provide answers to, was available. The informants in the informal interview were two agents (one in each zone) and five on-farm cattle feeders (two in the zone of Segou, and three in the zone of Banamba).

As unstandardized as this second type of interview may be, precious pieces of information would have been lost, without the use of the informal interview. This is, for example, the case for most of the details obtained about the "successful association", as it is

the case about some explanations having to do with the threats hanging heavily on the system of representatives in the zone of Banamba.

With regard to the problem of entry, my getting access to the respondents was facilitated by the collaboration of both upper and lower level workers from Ecibev and from "Embouche Paysanne". In general, the level of cooperation of respondents was satisfactory, with a response rate of 95%, and the survey — exploratory survey and interview — lasted twenty-nine days.

In the following chapter, the results of the sample survey will be presented, and the findings will be analyzed.

CHAPTER 4: PRESENTATION AND ANALYSIS OF  
THE RESULTS OF THE SURVEY

The Zones of Banamba and Segou: The two zones under investigation lie in central Mali, approximately between the 600 and 800 isohyets (rainfall lines) which the Banama zone overlaps slightly to the north. (Figure 4-1). The two zones are separated from one another by the valley of the Niger River so that the Segou zone occupies the right side of this valley, and the Banamba zone, its left side. The situation of the zone of Segou in an area of fertile, alluvial plains, between the Niger River and its tributary, the Bani River, makes this zone a nationwide privileged zone.

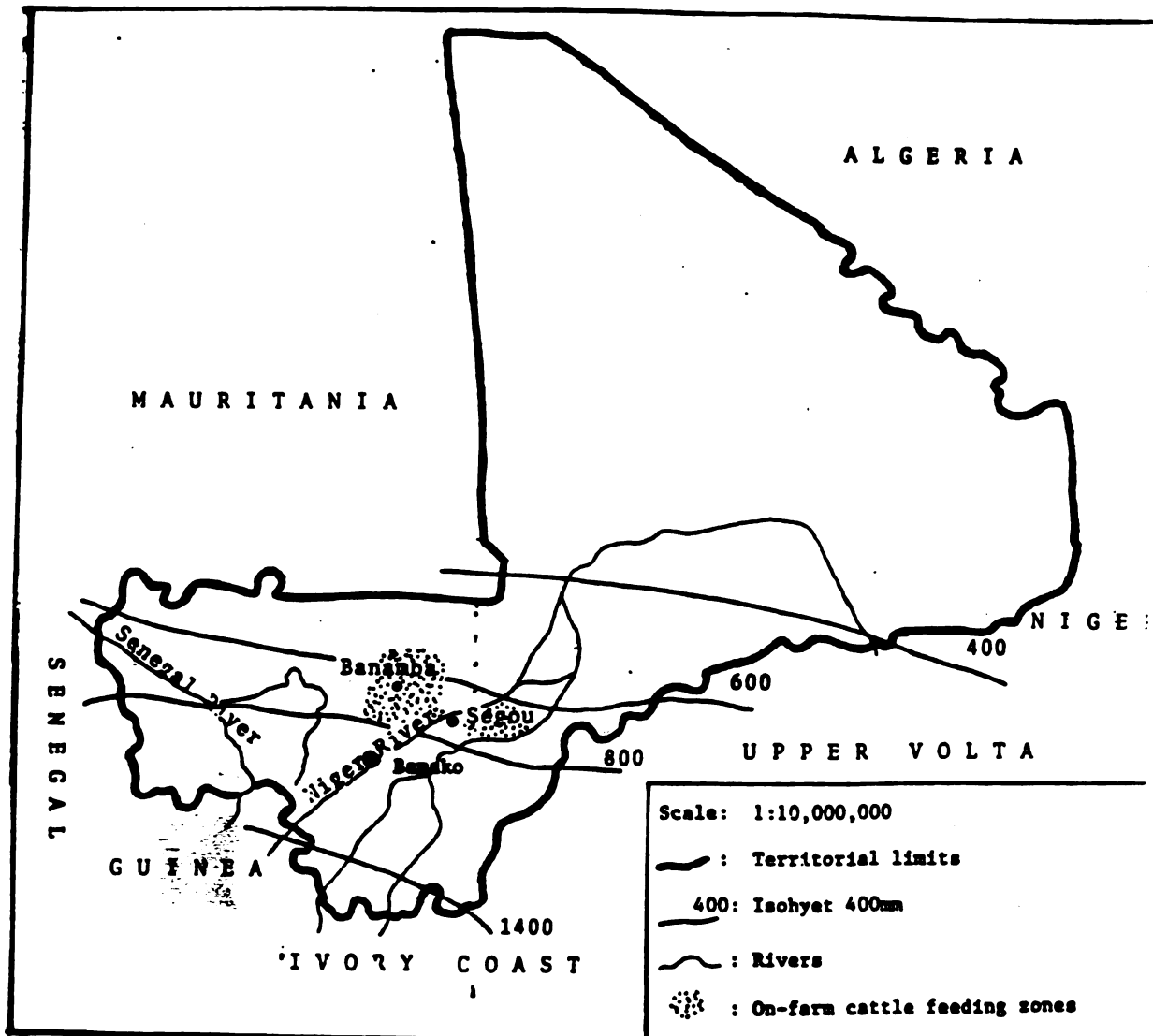
(Figure 4-1 about here)

From a geomorphological<sup>37</sup> point of view, the zone of Banamba is dominated by hard sandstone plateaus and dolerite formations from the precambrian and paleozoic eras on the one hand, and by plains and glacis moulded in soft sandstones on the other hand. In contrast, the zone of Segou presents a system of plains in the soft formations from the secondary and the tertiary eras.

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<sup>37</sup> Pierre Michel, in "Atlas Jeune Afrique": Atlas du Mali, 1980, pp. 8-9.

FIGURE 4-1: On-farm Cattle Feeding Zones in Mali. (Source: Climatic map of Mali in "Atlas Jeune Afrique": Atlas du Mali, 1980, p. 15, and Larry Harms, 1978, p. 37).



In both zones, the climate is of tropical type, with, however, two subtypes which differ from one another in their pluviometric and thermic patterns. They are: the "sudanic" subtype predominant in the zone of Segou, and the "sahelian" subtype prevalent in the zone of Banamba. The main characteristic common to these two subtypes is the neat division of the year in two seasons, and the implications of such a division for human activities. Production activities in general, and agricultural activities in particular, tend to be concentrated in the rainy season. On the opposite, during the dry season, there is a sharp decrease in both the number and intensity of human activities. In terms of differences, the rainy season is shorter in the Banamba zone than it is in the Segou zone, and the thermic amplitude is wider in the first than in the latter.

Two different ethnic groups live in the two zones: the Bambara (Bamanan) in the zone of Segou, and the Saracolles (or Soninke) in the zone of Banamba. Bokar N'Diaye<sup>38</sup> presents both groups as being "great farmers", pre-eminently oriented toward "agrarian types of work". Elsewhere in his book, the same author comes up with stereotypes<sup>39</sup> aimed at showing the distinctiveness of each ethnic group. Thus, the Bambara is referred to as "of enthusiastic nature", but also an "obstinate" character, and somebody that injustice makes "rebellious". A "constant desire to work" is stressed about the Saracolles whose "tenacity" and "concern for wealth" are equally evoked. It was unfortunate that the writer

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<sup>38</sup> Bokar N'Diaye: Les groupes ethniques au Mali, Bamako, 1970, pp. 125 and 204.

<sup>39</sup> Ibid, especially pp. 142-43, 210-11.

could not give any meaningful or acceptable explanation of any reasons or factors that may have contributed to bringing about such attributes. More constructively, however, he reports on differences between the Bambara and the Saracolle with regard to cattle raising.<sup>40</sup> According to N'Diaye, the Bambara do not have a tradition of stock breeders, although they have small herds which they leave the management to nomadic Peuls. On the contrary, the ethnic group Saracolle shows a long, deep-rooted habit of stock breeding. They raise cows, sheep, goats, but exhibit a particular predilection for horses. They also appreciate the donkey for it is an ideal work animal and "a very precious auxiliary for the door-to-door salesman, and...for the colanut importer". The author also talks about the existence, in the Saracolle community, of "a spirit of solidarity and of mutual help" which he considers a product of the Saracolle's agrarian occupation. Obviously this kind of statement needs further elaboration. The same observation can be made about N'Diaye's writing that "the Saracolle are particularly gifted in the domain of trade". However, Brasseur<sup>41</sup> reports basically the same characteristics about the Saracolle. But his approach is more explanatory. In his words, "the Soninke have probably never formed a politically organized ethnic group. The notion of clan appears to be capital and justifies the grouping of villages on a basis that one would...qualify to be sentimental, but which brings a real solidarity." Farther, he adds: "trade has

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<sup>40</sup> Ibid, pp. 125-26, 205-7.

<sup>41</sup> Brasseur, G. Les Etablissements Humains au Mali, 1968, p. 179.

always been in honor (among the Saracolles) and it has given way to remarkable infiltrations (of Saracolles elements) in the sudanic zone, ..." Thus, there exists scattered elements of two (and maybe three) fundamental differences between the Bamanan and the Soninke. The latter have developed a tradition of cattle breeding; the first have not. The Soninke are traditionally traders; the Bamanan are not. And finally, the existence of a sense of solidarity is stressed in the literature about the Saracolles; the same is neither explicitly nor implicitly stated about the Bambara.

These are the zones where, and the people among which, Ecibev undertook, beginning in 1976, to introduce and develop the practice of on-farm cattle feeding.

As of 1984, seven subzones make up the zone of Banamba. They are Touba, Banamba, Boron, Massantola, Sirakorola, Niamina and Madina-Sacko. The zone of Segou counts only two subzones: Bouawere<sup>42</sup> and Diouna. The relative importance of these different subzones, in terms of number of villages, and of farmers engaged in the cattle feeding business, and in terms of number of feeder cattle being fed in 1984, is given in Table 4-1, and partially reported in Figure 4-2.

(TABLE 4-1 and FIGURE 4-2 about here)

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<sup>42</sup> Previous studies talk of the subzone of Katiena instead of Bouawere. However, although Katiena is the chief town in the subzone, Bouawere is the residence of the Ecibev agent, and therefore the center of dispatching of money, veterinary care, and innovations.

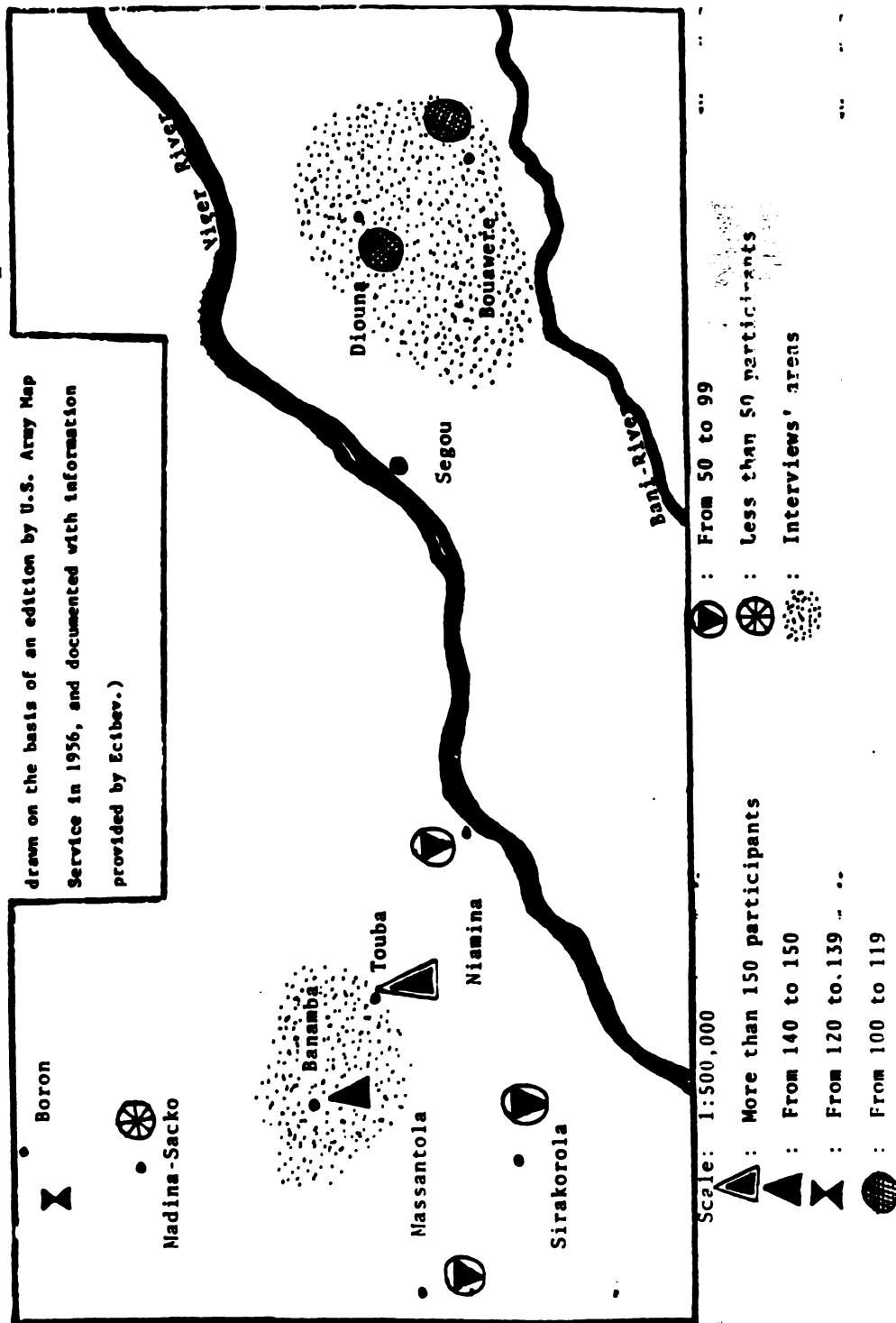
**Table 4-1: Number of villages, cattle feeders, and feeder cattle by subzone in 1984. (Source: Ecibev's data).**

| Subzones              | # of villages | # of cattle<br>feeders | # of feeder<br>cattle | Ratio cattle/<br>farmer |
|-----------------------|---------------|------------------------|-----------------------|-------------------------|
| <b><u>Banamba</u></b> |               |                        |                       |                         |
| Touba                 | 13            | 167                    | 500                   | 2.99                    |
| Banamba               | 10            | 143                    | 500                   | 3.50                    |
| Boron                 | 16            | 125                    | 400                   | 3.20                    |
| Massantola            | 9             | 52                     | 200                   | 3.85                    |
| Sirakorola            | 13            | 65                     | 200                   | 3.08                    |
| Niamina               | 12            | 73                     | 250                   | 3.42                    |
| Madina-Sacko          | 1             | 32                     | 100                   | 3.13                    |
| <b><u>Segou</u></b>   |               |                        |                       |                         |
| Bouawere              | 15            | 108                    | 236                   | 2.19                    |
| Diouna                | 10            | 103                    | 280                   | 2.72                    |
| <b>TOTAL</b>          | <b>99</b>     | <b>868</b>             | <b>2,666</b>          | <b>3.07</b>             |

FIGURE 4-2: The Different Subzones and Their Relative Importance in

Terms of Number of Participants in 1984. (Source: Map

drawn on the basis of an edition by U.S. Army Map  
Service in 1956, and documented with information  
provided by Ecibev.)



From this table, it can be seen that the ratio of feeder cattle to farmer is 3.07 for all subzones taken together, 3.27 in the zone of Banamba, and 2.44 in the zone of Segou. Among the different subzones, Massantola has the highest ratio, followed by Banamba, and then Niamina. The lowest ratios are found in the zone of Segou with 2.72 in Diouna, and 2.19 in Bouawere. There is, therefore, a pattern of inequality in the allocation of feeder cattle across zones. Also, one objective of this study is to investigate whether or not this kind of disparity has an effect on farmers' behaviour in relation to the cattle feeding business in general, and to cooperative organization regarding this business in particular.

The rest of this chapter consists essentially of a presentation of frequency distribution tables, and condcriptive statistics about the variables under investigation on one hand, and cross-comparisons of, and/or inferences about, patterns prevailing in the different subzones, zones, or at the level of the aggregated data.

Biographical Sketches of Respondents: This section reports some general information about the respondents, such as their age, marital status, number of children, level of education, and whether or not they spent part of their life outside of Mali.

The age structure of the respondents in the three subzones is presented in Table 4-2. As can be seen in this table, respondents from the subzone of Bouawere are younger than those from Diouna, and those from Diouna than respondents from Banamba. In the Bouawere subsample, 45.8 percent of all respondents are in the age group 24 to 40, against 31.8 percent for Diouna, and only 16.7 percent for

Banamba. Inversely, for the oldest age group (61 to 80), Banamba comes first with 25 percent of the respondents, followed by Diouna (18.2 percent), and with Bouawere coming last (only 04.2 percent). The widest age range is enregistered in Diouna (36 to 80), the second widest in Bouawere (24 to 63). Banamba has the smallest range (37 to 74).

(Table 4-2 about here)

Table 4-2: Age of respondents by subzone.

| PERCENT OF RESPONDENTS |                 |               |                |
|------------------------|-----------------|---------------|----------------|
| Age Groups             | Bouawere (N=24) | Diouna (N=22) | Banamba (N=12) |
| 24-40                  | 45.8            | 31.8          | 16.7           |
| 41-50                  | 29.2            | 18.2          | 16.7           |
| 51-60                  | 20.8            | 31.8          | 41.6           |
| 61-80                  | 04.2            | 18.2          | 25.0           |
| TOTAL                  | 100%            | 100%          | 100%           |

In general, in all subzones, respondents report a long period of stay in the villages they were in at the moment of the survey. Thus 100 percent of respondents from Banamba, 87 percent of those from Bouawere, and 85.7 percent of respondents from Diouna have been living in their villages for thirty years or more.

With regard to marital status, all the respondents but one are married. Polygyny is practiced in all three subzones. But it seems more popular in the subzone of Banamba than it is in Bouawere and Diouna, as can be inferred from Table 4-3.

(Table 4-3 about here)

Table 4-3: Number of Wives Per Respondent by Subzone.

| Number of<br>wives | PERCENT OF RESPONDENTS |               |                |
|--------------------|------------------------|---------------|----------------|
|                    | Bouawere (N=23)        | Diouna (N=22) | Banamba (N=12) |
| One wife           | 60.9                   | 54.6          | 25.0           |
| Two wives          | 30.4                   | 40.9          | 16.7           |
| Three wives        | 00.0                   | 04.5          | 50.0           |
| Four wives         | 08.7                   | 00.0          | 08.3           |
| TOTAL              | 100%                   | 100%          | 100%           |

This table shows that the majority of respondents from Bouawere (60.9 percent) and Diouna (54.5 percent) have one wife, when the

majority in Banamba (75 percent) have more than one wife, with 50 percent having three wives. No respondents have three wives in Bouawere, and only one respondent has this number of wives in Diouna. Since the number of wives is an indicator of socio-economic status in societies where polygyny is a common practice, it may be that respondents from Banamba are higher in status than those from Bouawere and Diouna. It may also be that, as a result of a more important out-migration of young males in the zone of Banamba,<sup>43</sup> the sex ratio is distorted, with fewer men as compared to the number of women. Such a situation is likely to result in more polygynous unions.

Another aspect is that wives constitute a labor force, and in general, respondents report that their wife or wives help them with their cattle feeding business. This is reported by 91.7 percent of respondents from Banamba, 82.6 percent of respondents from Bouawere, and 72.7 percent of those from Diouna. However, there are differences in views with regard to the amount of work contributed by wives. For example, 58.8 percent of all respondents in Banamba say their wives contribute an important part of their time to the cattle feeding business, as compared to 50 percent in Diouna, and only 39.1 percent in Bouawere.

With the exception of the unmarried respondent, all the other respondents have children. The number of children per respondent varies from 1 to 13 in the subzone of Bouawere, 1 to 11 in Diouna, and 1 to 21 in Banamba. There is also variability in the number of children across subzones as appears in Table 4-4.

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<sup>43</sup> The ethnic group of Saracolle is well-known for its contribution to migratory flows from Mali to Europe.

(Table 4-4 about here)

Table 4-4: Number of Children per Respondent by Subzone.

| Number of<br>children | PERCENT OF RESPONDENTS |               |                |
|-----------------------|------------------------|---------------|----------------|
|                       | Bouawere (N=23)        | Diouna (N=22) | Banamba (N=12) |
| 1-2                   | 21.8                   | 09.1          | 08.3           |
| 3-6                   | 47.8                   | 72.7          | 33.3           |
| 7-10                  | 21.7                   | 13.7          | 41.7           |
| >10                   | 08.7                   | 04.5          | 16.7           |
| TOTAL                 | 100%                   | 100%          | 100%           |

Here again, probably as one result of polygyny Banamba reports more respondents (58.4 percent) with a family of more than six children, than do Bouawere (30.4 percent) and Diouna (18.2 percent).

In all three subzones the majority of respondents who have children, have both sons and daughters. In terms of number of sons seven years old and older, Table 4-5 shows a neat enough difference between Banamba and the two other subzones.

Although some of these sons may leave their parents to seek jobs abroad or in larger cities of the country, these figures suggest that cattle feeders in Banamba have a more important potential labor force utilisable in cattle feeding than do cattle feeders in Bouawere and Diouna, a fortiori when we consider that

(Table 4-5 about here)

**Table 4-5: Number of Sons Seven Years Old or Older per  
Respondent by Subzone.**

| Number of sons<br>7 Years old<br>and older | PERCENT OF RESPONDENTS |               |                |
|--------------------------------------------|------------------------|---------------|----------------|
|                                            | Bouawere (N=24)        | Diouna (N=22) | Banamba (N=12) |
| 0                                          | 33.3                   | 09.1          | 08.3           |
| 1-2                                        | 33.3                   | 54.5          | 33.3           |
| 3-5                                        | 12.5                   | 31.8          | 41.7           |
| 6-10                                       | 20.8                   | 04.5          | 16.7           |
| TOTAL                                      | 100%                   | 100%          | 100%           |

post-nuptial residence with husband's parents is a common practice in rural Mali, and that such a practice is associated with longer participation of both the son and his wife in the accomplishment of household tasks.

With regard to daughters, Diouna comes first with 86.4 percent of the respondents having daughters seven years old or older. Banamba follows with 83.4 percent of the respondents, and Bouawere occupies the third place with 66.6 percent of the respondents.

The data also point to the existence of a pattern of sex differentials with regard to children's contribution to performing cattle feeding related jobs, and from the standpoint of the interviewees. (Table 4-6).

(Table 4-6 about here)

**Table 4-6: Respondent's Perception of Sex Differential in Children's Contribution by Subzone. (Question: Do you think your daughters contribute more, about the same, or less than your sons in helping you with your cattle feeding operation?)**

| Answers        | PERCENT OF RESPONDENTS PER CATEGORY OF ANSWER |               |                |
|----------------|-----------------------------------------------|---------------|----------------|
|                | Bouawere (N=13)                               | Diouna (N=18) | Banamba (N=11) |
| More           | 00.0                                          | 05.6          | 00.0           |
| About the same | 07.7                                          | 11.1          | 18.2           |
| Less           | 92.3                                          | 83.3          | 81.8           |
| TOTAL          | 100%                                          | 100%          | 100%           |

An overwhelming majority of the respondents in all three sub-zones (92.3 percent for Bouawere, 83.3 percent for Diouna, and 81.3 percent for Banamba) report that daughters contribute less help than sons in the cattle feeding business. Only one respondent out of forty two supports the contrary. Even though five respondents report that daughters contribute about the same as sons, there

exists an up-grading of the latter. The implication, on a demographic ground, of this up-grading of sons as compared to daughters, is likely to be more incentive for higher fertility levels.<sup>44</sup>

More than wives, children contribute an important part of their time to the cattle feeding operation. According to the data, 81.7 percent of the respondents from Diouna, 75 percent of those from Banamba, and 55 percent of the respondents from Bouawere say their children contribute either an important part of their time or all their time to the cattle feeding business.

With regard to education, none of the respondents have received either a formal training from "French School" or "Madersa School", or an informal training from "Balaku Kalan". However, fifteen respondents out of fifty-eight have attended "Koranic school". Among them, six are from the Banamba subsample, and nine from the Segou subsample. One third have received from one to three years of training, one fourth from four to six years, another third from seven to ten years, and still one respondent with more than ten years, of training. However, because this training is centered on more religious achievement of the neophyte, but not on any general education, it is not taken into consideration in later analyses.

In contrast to the situation found in the domain of education, the data provide enlightening information about cosmopolitanism among respondents. Two indicators have been used as a measure for

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<sup>44</sup> For a more detailed discussion of the relationships between fertility behavior and sex preferences among children, see Williamson, Nancy E. "Boys or Girls? Parents' Preferences and Sex Control." Population Bulletin 32 (August), 1978, pp. 3-37.

cosmopolitanism. The first is whether the respondent spent part of his life outside of Mali, and the second is the duration of the stay abroad. As appears in Table 4-7, 75 percent of the respondents from Banamba have spent part of their life outside of Mali, as compared to 59.1 percent of the respondents from Diouna, and to 45.8 of the respondents from Bouawere. In a like manner, respondents from Banamba have stayed longer outside of Mali than other respondents. (Table 4-8).

(Tables 4-7 and 4-8 about here)

**Table 4-7: Stay Outside of Mali by Subzone. (Question: Have you spent part of your life outside of Mali?)**

| Answers | PERCENT OF RESPONDENTS |               |                |
|---------|------------------------|---------------|----------------|
|         | Bouawere (N=24)        | Diouna (N=22) | Banamba (N=12) |
| Yes     | 45.8                   | 59.1          | 75.0           |
| No      | 54.2                   | 40.9          | 25.0           |
| TOTAL   | 100%                   | 100%          | 100%           |

**Table 4-8: How Long a Stay Outside of Mali by Subzone.**

| Duration of Stay    | PERCENT OF RESPONDENTS* |               |               |
|---------------------|-------------------------|---------------|---------------|
|                     | Bouawere (N=11)         | Diouna (N=13) | Banamba (N=9) |
| One year            | 63.6                    | 84.6          | 33.3          |
| Two years           | 27.3                    | 07.7          | 33.3          |
| Three to five years | 09.1                    | 07.7          | 33.3          |
| TOTAL               | 100%                    | 100%          | 100%          |

\*Table includes only respondents who reported spending time outside Mali.

In general these out-migrants had as countries of destination the Ivory Coast, Guinea, Upper-Volta, and to a less important degree, Ghana and Senegal. In these countries, they were traders (mainly respondents from Banamba), diggers (respondents from the zone of Segou), wage labourers, or gold/diamond searchers.

In summary, the biographical sketches of respondents show that respondents from Banamba tend to be older, to engage in polygynous unions more often, to have more children, and more sons seven years old or older, to be more cosmopolitan, than respondents from

Bouawere and Diouna. In contrast, respondents from the subzone of Bouawere tend to be younger, to stay in monogynous unions more often, to have fewer sons seven years old or older, to be less cosmopolitan, but to perceive sex differentials among siblings more unanimously, than respondents from the subzones of Diouna and Banamba.

With regard to the study hypotheses, these characteristics suggest that respondents from Banamba may be more likely to embark on cooperative organizations than those from Diouna, and respondents from Diouna than those from Bouawere.

Aspects of Cropping: A wide variety of crops are cultivated in the area of the study. They are presented in Table 4-9. From this

(Table 4-9 about here)

table, the crops that are the most commonly grown in all three subzones taken together are in that order: bean, "fonio,"<sup>45</sup> peas, millet, and sorghum. All the respondents grow beans. This is understandable given the fact that a farmer, to qualify for an on-farm cattle feeding loan, must be a bean grower. All the respondents but one, also grow fonio. This widespread renewed attention of Malian farmers to fonio -- which is, along with cassava, traditionally referred to as a "bridge crop" -- indicate

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<sup>45</sup> Quick maturing variety of cereal with very small grains. In tropical Africa, "fonio" is considered "a bridge-crop" helping the peasant to pass the bad season.



mostly farmers' attempt to readapt to an ecosystem which is becoming less and less reliable, due to significant changes in both the climatic and pedological conditions. Peas, millet and sorghum are traditional food crops. However, millet and sorghum are not grown in the subzone of Banamba in a magnitude comparable to that of Diouna or Bouawere. To a greater extent, the same pattern exists with maize. In the subzone of Banamba, it is rather "souna" (a variety of millet that better fits in conditions of insufficient rains than "regular" millet) that is the most cultivated cereal.

The data also indicate that all the respondents but one grow four or more different crops. The most frequent combinations of the three most important crops in terms of the proportion of land devoted to them are presented in Table 4-10.

(Table 4-10 about here)

As far as the zone of Segou is concerned, what jumps to the eye is the important place that sorghum and millet occupy in the cropping system, in both the subzones of Bouawere and Diouna. "Souna" and peanut have an equivalent supremacy in the cropping system of the respondents from Banamba. What might be unexpected, however, is the fact that bean is not reported at all in any of the combinations mentioned. This is so because usually bean is not cultivated in a distinct plot. It is rather grown in association with sorghum, millet, "souna" and maize. Thus, the tendency among

the respondents is not to consider beans separately. However, the cultivation of beans in a separate plot of its own is an enterprise dictated by the development of the cattle feeding business, and encouraged by Ecibev.

**Table 4-10: Most Frequent Combinations of the Three Most Important Crops in Terms of Proportion of Land Devoted to Them by Subzone.**

| Subzones           | Combinations              | % of respondents<br>per combination |
|--------------------|---------------------------|-------------------------------------|
| Bouawere<br>(N=24) | 1. Sorghum/fonio/millet   | 33.3                                |
|                    | 2. Sorghum/millet/peanuts | 16.7                                |
|                    | 3. Sorghum/millet/maize   | 16.7                                |
| Diouna<br>(N=22)   | 1. Sorghum/fonio/millet   | 27.3                                |
|                    | 2. Sorghum/millet/peas    | 18.2                                |
|                    | 3. Sorghum/millet/peanuts | 13.6                                |
| Bonamba<br>(N=12)  | 1. Souna/peanut/millet    | 25.0                                |
|                    | 2. Souna/peanut/fonio     | 25.0                                |

The minimum, maximum, and average numbers of hectares for each of the three most important crops, and for each subzone, the zone of Segou, and the entire area of the study, are given in Table 4-11.

(Table 4-11 about here)

**Table 4-11: Mean, Minimum, and Maximum Number of Hectares for Each of the Three Most Important Crops.**

| Areas     | First Crop |       |       | Second Crop |       |       | Third Crop |       |       |
|-----------|------------|-------|-------|-------------|-------|-------|------------|-------|-------|
|           | Mean       | Mini. | Maxi. | Mean        | Mini. | Maxi. | Mean       | Mini. | Maxi. |
| Bouawere  | 5.1        | 2.0   | 10.0  | 2.1         | .5    | 10.0  | 1.3        | .5    | 9.0   |
| Diouna    | 8.1        | 3.0   | 20.0  | 1.9         | .5    | 8.0   | 1.3        | .5    | 3.0   |
| Segou     | 6.6        | 2.0   | 20.0  | 2.0         | .5    | 10.0  | 1.3        | .5    | 9.0   |
| Banamba   | 5.4        | 3.0   | 10.0  | 4.1         | 2.0   | 10.0  | 2.8        | 1.0   | 7.0   |
| Aggregate | 6.2        | 2.0   | 20.0  | 2.4         | .5    | 10.0  | 1.5        | .5    | 9.0   |

Under the reservation that the above figures are reliable,<sup>46</sup> with the exception of the first crop, the average number of hectares in Banamba for both the second and third crops is the double of those recorded in Bouawere, and Diouna. This trend reappears in the global figures about the average numbers of hectares to respondent in each subzone. There, Banamba comes first with a mean of 18.1 hectares per respondent, when Diouna reports 13.1, and Bouawere 9.1 hectares per respondent.

Most respondents own the land they are exploiting, and the land ownership rate is 79.2 percent among respondents from Bouawere, 81.8 percent among those from Diouna, whereas in Banamba this rate is 100 percent. Farmers who are tilling somebody else's land for their own benefit say they are using the land under "no conditions". In other words, they neither share the crop, nor pay for a rent. However, it is tacitly agreed that they will return the land back to the owner whenever this one manifests such desire.

In terms of equipment, almost all the respondents in all three subzones possess plough and oxen. They all have cart in the Banamba subsample, against 72.7 percent in Diouna, and 58.3 percent in Bouawere. The level of recourse to hired labor is very low in Bouawere (12.5 percent) and Diouna (18.2 percent) as compared to the situation in Banamba where 75 percent of the respondents make use of hired labor.

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<sup>46</sup> Although many respondents seemed to be familiar with the notion of hectare, others showed a degree of embarrassment, and cases of misstatement (and of overstatement in particular) may not be excluded.

Respondents from the zone of Segou are unanimous in saying that their most beneficial crop is millet. The same agreement does not exist among the respondents from Banamba: fifty percent of them report "souna" as being the most beneficial crop, twenty percent report millet, and still ten percent consider maize as being the most beneficial crop. However, almost invariably, respondents from both zones give the same sets of reasons for their choices. One first reason is that the chosen crop is a basic food crop. Another reason is that the crop adequately copes with conditions of insufficient rains. One third argument is that the crop referred to as most beneficial, is also more adapted to the pedological characteristics of the area than other varieties.

The proportion of household consumption provided by the cropping business of the farmer himself is given in Table 4-12.

(Table 4-12 about here)

This table shows that the subzones of Bouawere and Diouna are much closer to attaining self-sufficiency in food production than the subzone of Banamba. In effect in the subzone of Bouawere, 91.7 percent of the respondents raise from 75 to 100 percent of the food consumed in their households. In Diouna 90.8 percent of the respondents also raise that proportion. But in Banamba 58.3 percent of the respondents raise only 50 percent or less of the food

**Table 4-12: Percent of Household Consumption Raised by the Farmer  
by Subzone.**

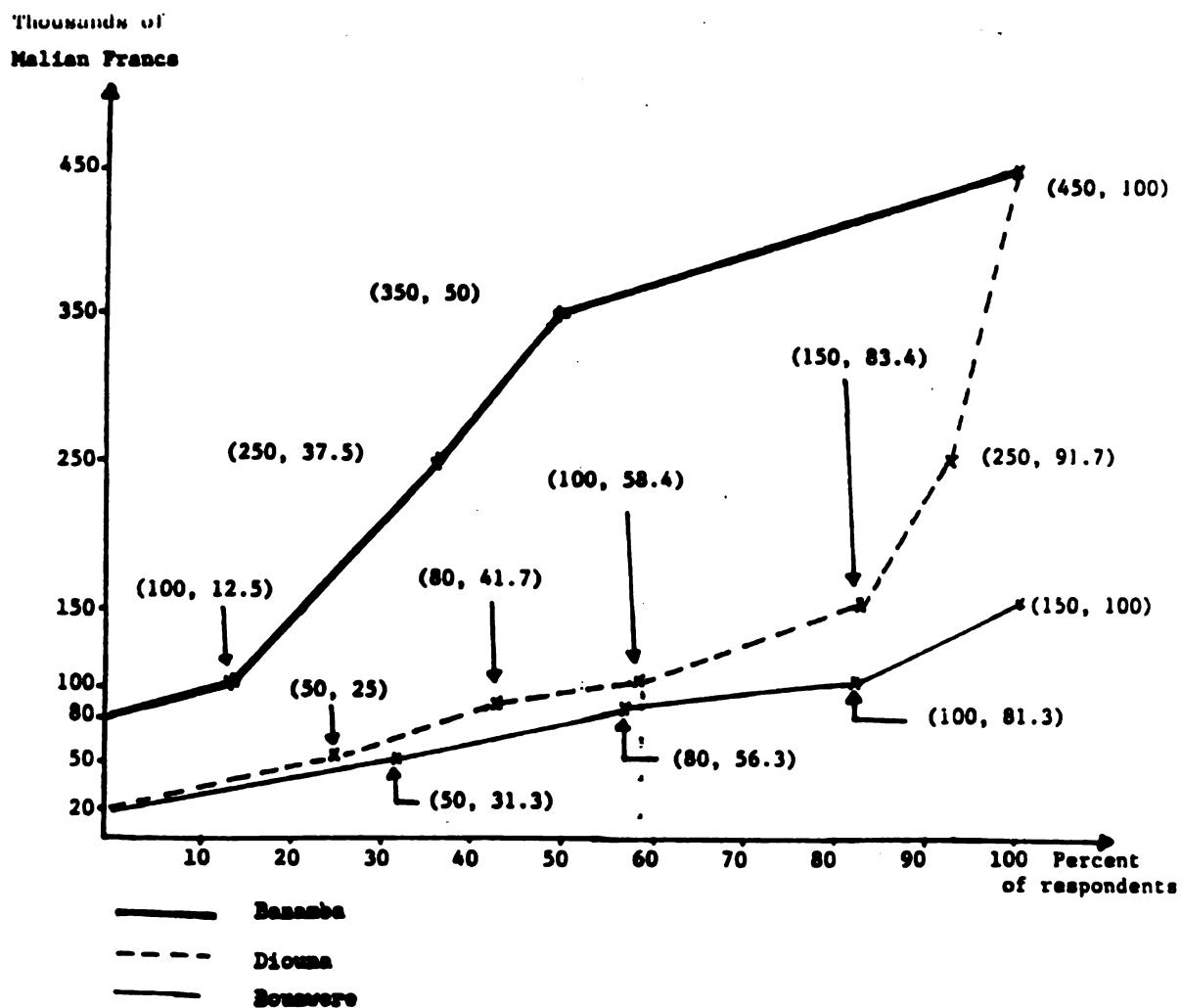
| Proportion<br>raised | Percent of Respondents Raising That Proportion |               |                |
|----------------------|------------------------------------------------|---------------|----------------|
|                      | Bouawere (N=24)                                | Diouna (N=22) | Banamba (N=12) |
| 100%                 | 62.5                                           | 63.6          | 41.7           |
| 90%                  | 08.3                                           | 00.0          | 00.0           |
| 80%                  | 04.2                                           | 22.7          | 00.0           |
| 75%                  | 16.7                                           | 04.5          | 00.0           |
| 50%                  | 08.3                                           | 09.1          | 33.3           |
| 50%                  | 00.0                                           | 00.0          | 25.0           |
| TOTAL                | 100%                                           | 100%          | 100%           |

consumed in their households. This situation in the subzone of Banamba may be partly attributable to poorer bio-climatic conditions, and partly due to greater emphasis on peanut as cash-crop. In effect, although a somewhat equal proportion of respondents in all three subzones report selling part of their crops, there are important differences across subzones in terms of the amount of money raised from the sale of crops, as substantiated in Figure 4-3. This diagram reveals that from 56 to 58 percent of all respondents in the zone of Segou are concentrated in the low money making level (20 to 100 thousand Malian francs). Only 12.5 percent of the respondents from Banamba are in the same category when 50 percent of them are raising from 350 to 450 thousands Malian

francs. In this higher level, we found only 8.3 percent of the respondents from Diouna, and not one person from the subsample of Bouawere. In short, the smaller the amount of money, the greater the proportion of people from the zone of Segou, and the smaller the proportion of people from Banamba. Symmetrically, the larger the amount of money, the smaller the proportion of respondents from Segou, and the greater the proportion of respondents from Banamba.

(Figure 4-3 about here)

Figure 4-3: Amount of Money Raised from the Sale of Crops  
Among Respondents in the Three Subzones.



In summary, farmers from the entire area grow a wide variety of crops. They successfully demonstrate their understanding of their environment. On the average, respondents from Banamba have larger farm size, make more money from cropping than their counterparts from Segou. But on the other side, they are more dependent on the market for their households consumption than respondents from Segou. Also, it may be that the relative self-sufficiency in food production in this latter area has resulted in lesser motivation for the cattle feeding business among the population.

The Cattle Feeding Business: As for the aggregate 32.8 percent of the respondents have been working in the cattle feeding operation for two to three years, 34.5 percent for four to seven years, and 32.7 percent for eight or nine years. In general, the respondents do not feed more than two cattle their first year in the project. The number of cattle being currently fed per respondent and per subzone is presented in Table 4-13.

(Table 4-13 about here)

**Table 4-13: Number of Cattle Being Fed in 1984 Per Respondent,  
by Subzone.**

| Number of<br>Cattle | PERCENT OF RESPONDENTS |               |                |
|---------------------|------------------------|---------------|----------------|
|                     | Bouawere (N=24)        | Diouna (N=22) | Banamba (N=12) |
| 1-2                 | 62.5                   | 45.5          | 00.0           |
| 3-5                 | 37.5                   | 40.9          | 50.0           |
| 6 and more          | 00.0                   | 13.6          | 50.0           |
| TOTAL               | 100%                   | 100%          | 100%           |

Most respondents from Bouawere (62.5 percent) are feeding one or two cattle. No respondents from Banamba are in this category of one or two cattle while 45.5 percent of the respondents from Diouna also have one to two cattle being fed. Conversely, 50 percent of the respondents from Banamba are feeding six or more cattle, and no respondents from Bouawere are in this category. Some respondents from Diouna (13.6 percent) also are feeding six or more cattle.

In terms of amount of time devoted to the cattle feeding activity, 62.5 percent of the respondents from Bouawere, 63.6 percent of those from Diouna, and 66.7 percent of the respondents from Banamba say they devote "all their time"<sup>1</sup> to the activity. The rest of the respondents in each subzone say they devote either an important part of

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<sup>1</sup> This refers to the time of cattle feeders in the period from February to April when cropping activities are stopped or at their lowest levels.

or almost all their time to the cattle feeding business. These answers, however, leave one with some skepticism mainly in the case of Banamba when these figures are compared with the data about the activities performed by the cattle feeders themselves. Clearly, respondents from Banamba are found to do fewer tasks related to cattle feeding, and therefore are expected to devote less time to cattle feeding than other respondents. These data are presented in Table 4-14. In the light of this table, it appears that in four tasks out of a list of seven cattle feeding related tasks, the direct involvement of cattle feeders from Bouawere is greater than that of cattle feeders from Diouna and Banamba. The lowest levels of direct involvement in all tasks but three (purchase and sale of cattle, and meeting with other farmers) are registered among cattle feeders from Banamba. It may be that in Banamba, more wives per cattle feeder, and more involvement of wives in cattle feeding related tasks, and also more sons seven years old and older, have resulted in a lesser need for direct involvement of cattle feeders themselves in most activities. However, facts are stubborn. These facts are that cattle feeders from Bouawere do more work (in terms of direct involvement), but get less profit from the activity given their smaller number of cattle.

(Table 4-14 about here)

In all three subzones, the two tasks that are identified as the most difficult tasks to perform are in order: 1) bringing feed and water to cattle, and 2) cleaning the cattle-shed. Also, the majority of the respondents in all three subzones find the cattle

feeding business a very profitable activity.<sup>2</sup> This is reported by 90.9 percent of the respondents from Diouna, 82.6 percent of those from

Table 4-14: Activities Performed by Cattle Feeders Themselves by Subzone.

| Activities Performed             | Percent of Respondents Performing an Activity |              |               |
|----------------------------------|-----------------------------------------------|--------------|---------------|
|                                  | Bouawere(N=24)                                | Diouna(N=22) | Banamba(N=12) |
| 1. Looking for cattle to buy     | 87.5                                          | 63.6         | 91.7          |
| 2. Looking after cattle          | 95.8                                          | 81.8         | 58.3          |
| 3. Bringing feed/water to cattle | 95.8                                          | 86.4         | 50.0          |
| 4. Cleaning cattle-shed          | 87.5                                          | 63.6         | 33.3          |
| 5. Meeting with other farmers    | 62.5                                          | 54.5         | 83.3          |
| 6. Looking for buyers            | 100.0                                         | 86.4         | 100.0         |
| 7. Taking animals to market      | 58.3                                          | 72.7         | 16.7          |

<sup>2</sup> For more details about the profits of the cattle feeding business, see Rapport BECIS: "Etude sur l'Embouche Paysanne, Perception et Economie." Rapport final, Fevrier-Mars 1982, Bamako, pp. 71-72.

Bouawere, and 66.7 percent of the respondents from Banamba. These figures, however, (and principally the figures from Banamba) deviate significantly from the writer's expectations in the sense that cattle feeders from Banamba are feeding more cattle, and presumably are making more profit than those from Bouawere. From this viewpoint one would expect more respondents from Banamba reporting that the activity is very profitable. Also, the present figures suggest that respondents from Banamba and Segou may not have the same measurement scale with regard to profitability. In other words, the level of profit that is sufficient to make a respondent from Segou decide that a business is profitable, may not be sufficient to make a respondent from Banamba reach a similar conclusion. This is understandable insofar as respondents from Banamba are peanut producers and get more from peanut than do respondents from Segou.

Interviewees were asked about the problems they were encountering in the cattle feeding operation. Their answers are reported in Table 4-15.

(Table 4-15 about here)

The three problems that are reported more often in each subzone, in the zone of Segou, and in the aggregate data, are summarized in Table 4-16.

(Table 4-16 about here)

As can be seen from both tables 4-15 and 4-16, the subzones of Bouawere and Banamba report marketing as their most serious problem. In

Table 4-15: Problems Encountered by Cattle Feeders, by Subzone.

| PROBLEMS<br>ENCOUNTERED                                               | Percent of Farmers Reporting the Problem |                  |                 |                   |                     |
|-----------------------------------------------------------------------|------------------------------------------|------------------|-----------------|-------------------|---------------------|
|                                                                       | Bouawere<br>(N=24)                       | Diouna<br>(N=22) | Segou<br>(N=46) | Banamba<br>(N=12) | Aggregate<br>(N=58) |
| <u>Money Availability:</u>                                            | 00.0                                     | 04.5             | 02.2            | 24.9              | 06.8                |
| 1. Too many applicants, but not enough money                          | 00.0                                     | 00.0             | 00.0            | 08.3              | 01.7                |
| 2. Loan provided too late                                             | 00.0                                     | 04.5             | 02.2            | 08.3              | 03.4                |
| 3. Rich people invading project and taking benefit away from the poor | 00.0                                     | 00.0             | 00.0            | 08.3              | 01.7                |
| <u>Other Input Availability:</u>                                      | 45.8                                     | 36.2             | 41.9            | 25.0              | 38.1                |
| 1. Insufficient supply of cottonseed and salt                         | 25.0                                     | 09.0             | 17.6            | 16.7              | 17.3                |
| 2. Cottonseed and salt received late                                  | 08.3                                     | 04.5             | 06.6            | 00.0              | 05.2                |
| 3. Insufficient veterinary care                                       | 00.0                                     | 22.7             | 11.1            | 08.3              | 10.4                |
| 4. Insufficient water supply                                          | 12.5                                     | 00.0             | 06.6            | 00.0              | 05.2                |
| <u>Input Cost:</u>                                                    | 25.1                                     | 22.5             | 24.0            | 83.4              | 36.4                |
| 1. Reimbursing too much to Ecibev                                     | 04.2                                     | 04.5             | 04.4            | 25.0              | 08.6                |
| 2. Feeder cattle too expensive                                        | 16.7                                     | 09.0             | 13.1            | 41.7              | 19.1                |
| 3. Burden of transportation of cottonseed and salt                    | 04.2                                     | 09.0             | 06.5            | 16.7              | 08.7                |
| <u>Other Problems:</u>                                                | 45.8                                     | 16.7             | 35.3            | 41.7              | 36.3                |
| 1. Marketing                                                          | 33.3                                     | 16.7             | 28.7            | 25.0              | 27.9                |
| 2. Farmers not free to purchase cattle they want                      | 12.5                                     | 00.0             | 06.6            | 00.0              | 05.2                |
| 3. Loss of cattle                                                     | 00.0                                     | 00.0             | 00.0            | 16.7              | 03.5                |

Table 4-16: Three Problems That Are Reported More Often.\*

| AREAS     | PROBLEMS                                                                                                                                                                                                                                    |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bouawere  | <ol style="list-style-type: none"> <li>1. Marketing</li> <li>2. Insufficient supply of cottonseed and salt</li> <li>3. Feeder cattle too expensive</li> </ol>                                                                               |
| Diouna    | <ol style="list-style-type: none"> <li>1. Insufficient veterinary care</li> <li>2. Marketing</li> <li>3. Insufficient supply of cottonseed and salt / and feeder cattle too expensive</li> </ol>                                            |
| Segou     | <ol style="list-style-type: none"> <li>1. Marketing</li> <li>2. Insufficient supply of cottonseed and salt</li> <li>3. Feeder cattle too expensive</li> </ol>                                                                               |
| Banamba   | <ol style="list-style-type: none"> <li>1. Marketing</li> <li>2. Reimbursing too much to Ecibev</li> <li>3. Insufficient supply of cottonseed and salt / and burden of transportation of cottonseed and salt / and loss of cattle</li> </ol> |
| Aggregate | <ol style="list-style-type: none"> <li>1. Marketing</li> <li>2. Feeder cattle too expensive</li> <li>3. Insufficient supply of cottonseed and salt</li> </ol>                                                                               |

\*In each case the order of presentation of the problems is important. The first problem on the list is reported more often than the second, and the second than the third.

contrast to these two subzones, Diouna reports that insufficient veterinary care is the most serious problem, and marketing comes in a second position. In Bouawere the respondents say that insufficient cottonseed and salt supply is their second most serious problem, when the respondents from Banamba say they reimburse too much to Ecibev. As their third most serious problem, the cattle feeders from Bouawere point to the fact that feeder cattle are too expensive. Cattle feeders from Diouna also report this problem, along with insufficient supply of cottonseed and salt. In Banamba, three different problems are reported equally as being all three the respondents' third most serious problem.

When asked what they think can be done to make the activity more successful, the respondents come up with a wide range of proposals reported in Table 4-17, when a summary of the three most reported propositions is given in Table 4-18.

(Tables 4-17 and 4-18 about here)

These tables, and more specifically Table 4-18, allow for some comparisons between the respondents' reported problems and the solutions they suggest to these problems. From this point of view, in general, the solutions proposed are consistent with the problems reported, with the exception of the category of problem that ranks first in the subzone of Diouna, namely the problem of insufficient veterinary care to which the respondents from Diouna do not propose any solutions. In addition, the order in which the problems are presented does not always match with that of the solutions proposed.

In summary, the respondents in general find the cattle feeding business profitable. Their most serious problems in regarding the

Table 4-17: Respondents' Propositions for a More Successful Project, by Subzone.

| PROPOSITIONS                                                                | Percent of Farmers per Proposition |                  |                 |                   |                     |
|-----------------------------------------------------------------------------|------------------------------------|------------------|-----------------|-------------------|---------------------|
|                                                                             | Bouawere<br>(N=24)                 | Diouna<br>(N=22) | Segou<br>(N=46) | Banamba<br>(N=12) | Aggregate<br>(N=58) |
| <u>Money availability:</u>                                                  | 16.7                               | 04.5             | 10.9            | 50.1              | 29.0                |
| 1. Provide more money for more people                                       | 04.2                               | 00.0             | 02.2            | 16.7              | 05.2                |
| 2. Increase amount of money per head of feeder cattle                       | 04.2                               | 00.0             | 02.2            | 16.7              | 15.2                |
| 3. Bring money sooner so to get feeder cattle at reasonable price           | 08.3                               | 04.5             | 06.5            | 16.7              | 08.6                |
| <u>Other input availability:</u>                                            | 50.0                               | 22.6             | 37.0            | 41.7              | 37.9                |
| 1. Increase quantity of cottonseed and salt                                 | 33.3                               | 04.5             | 19.6            | 16.7              | 19.0                |
| 2. Bring cottonseed and salt in time                                        | 08.3                               | 09.1             | 08.7            | 00.0              | 06.9                |
| 3. Provide more drugs and veterinary care                                   | 04.2                               | 04.5             | 04.3            | 16.7              | 06.9                |
| 4. Help solve problem of water                                              | 04.2                               | 00.0             | 02.2            | 08.3              | 03.4                |
| 5. Make bean seed available                                                 | 00.0                               | 04.5             | 02.2            | 00.0              | 01.7                |
| <u>Input cost:</u>                                                          | 04.2                               | 09.0             | 06.5            | 08.3              | 06.6                |
| 1. Lower Ecibev's interest rate                                             | 00.0                               | 04.5             | 02.2            | 08.3              | 03.4                |
| 2. Insure transportation of cottonseed and salt to farmers                  | 04.2                               | 04.5             | 04.3            | 00.0              | 03.2                |
| <u>More freedom:</u>                                                        | 20.8                               | 18.1             | 19.5            | 16.7              | 18.9                |
| 1. Guarantee freedom to buy feeder cattle without an inference of the agent | 12.5                               | 13.6             | 13.0            | 00.0              | 10.3                |
| 2. Allow to feed more cattle                                                | 00.0                               | 00.0             | 00.0            | 16.7              | 03.4                |
| 3. Allow farmers to sell cattle as soon as they are fat                     | 08.3                               | 04.5             | 06.5            | 00.0              | 05.2                |
| <u>Other propositions:</u>                                                  | 29.2                               | 54.4             | 41.3            | 24.9              | 37.8                |
| 1. Find sure channel to sell fed cattle                                     | 25.0                               | 22.7             | 23.9            | 08.3              | 20.7                |
| 2. Lead farmers to agree to designate a representative                      | 00.0                               | 00.0             | 00.0            | 08.3              | 01.7                |
| 3. Reach more agreement between Ecibev and farmers                          | 04.2                               | 00.0             | 02.2            | 00.0              | 01.7                |
| 4. Keep non-farmers away                                                    | 00.0                               | 09.1             | 04.3            | 08.3              | 05.2                |
| 5. Success depends on the personnel of Ecibev                               | 00.0                               | 09.1             | 04.3            | 00.0              | 03.4                |
| 6. Success is a matter of luck                                              | 00.0                               | 04.5             | 02.2            | 00.0              | 01.7                |
| 7. Let the project continue like it is                                      | 00.0                               | 04.5             | 02.2            | 00.0              | 01.7                |
| 8. Fight hunger first                                                       | 00.0                               | 04.5             | 02.2            | 00.0              | 01.7                |

**Table 4-18: Three Most Frequent Propositions Among Respondents in Each Subzone, the Zone of Segou, and in the Aggregate Data.**

| AREAS     | PROPOSITIONS                                                                                                                                                                                                                                                                                                                                     |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bouawere  | <ol style="list-style-type: none"> <li>1. Increase quantity of cottonseed and salt</li> <li>2. Find sure channel to sell food cattle</li> <li>3. Guarantee freedom to buy feeder cattle without an inference of the agent</li> </ol>                                                                                                             |
| Diouna    | <ol style="list-style-type: none"> <li>1. Find sure channel to sell food cattle</li> <li>2. Guarantee freedom to buy feeder cattle without an inference of the agent</li> <li>3. Keep away non-farmers / and bring cottonseed and salt in time / and success depends on the personnel of Ecibev</li> </ol>                                       |
| Segou     | <ol style="list-style-type: none"> <li>1. Find sure channel to sell fed cattle</li> <li>2. Increase quantity of cottonseed and salt</li> <li>3. Guarantee freedom to buy feeder cattle without an inference of the agent</li> </ol>                                                                                                              |
| Banamba   | <ol style="list-style-type: none"> <li>1. Provide more money for people / and increase the amount of money per head of feeder cattle / and increase quantity of cottonseed and salt / and bring money sooner so to get feeder cattle at reasonable price / and allow to feed more cattle / and provide more drugs and veterinary care</li> </ol> |
| Aggregate | <ol style="list-style-type: none"> <li>1. Find sure channel to sell fed cattle</li> <li>2. Increase quantity of cottonseed and salt</li> <li>3. Guarantee freedom to buy feeder cattle without an inference of the agent</li> </ol>                                                                                                              |

aggregate data are marketing, high market price of feeder cattle, and insufficient supply of cottonseed and salt. However, across zones as well as among subzones, there are differences in priority with regard to the problems encountered. Consequently, if the approach of the cattle feeding agency consists of generating prototype solutions for both the zones of Segou and of Banamba, the aggregate cells in tables 4-16 and 4-18 may be worth considering. But if on the contrary this approach consists of breaking heterogeneity into homogenous subgroups and developing strategies appropriate to each, then the subzones cells are of greater interest.

With regard to business size and activities performed by cattle feeders themselves, the respondents from Banamba feed more cattle, but are less directly involved in getting the job done than the respondents from Bouawere and Diouna.

Communication Patterns: Three types of communication have been investigated: communication between farmers and change agent, intra-familial type of communication, and communication among farmers themselves.

Table 4-17 reports the stated level of frequency of contacts between the change agent and the farmers. According to the table, the level of frequency of contacts between the change agent and the farmers is lower in Diouna than it is in Banamba, and in Banamba than in Bouawere. Actually, Diouna and Banamba are very close. The difference with Bouawere may be due to the fact that the agents in the field are performing differently.

(Table 4-19 about here)

**Table 4-19: Frequency of Contacts Between the Ecibev Agent and the Cattle Feeders by Subzone.**

| Frequency of Visits<br>to Farmers             | PERCENT OF FARMERS |                   |                   |
|-----------------------------------------------|--------------------|-------------------|-------------------|
|                                               | Bouawere<br>(N=24) | Diouana<br>(N=22) | Banamba<br>(N=12) |
| 1. Less than one visit every<br><br>two weeks | 04.2               | 22.7              | 25.0              |
| 2. One visit every two weeks                  | 12.5               | 22.7              | 16.7              |
| 3. One visit every week                       | 54.2               | 45.5              | 41.7              |
| 4. Two visits every week                      | 29.1               | 09.1              | 16.6              |
| TOTAL                                         | 100%               | 100%              | 100%              |

A closer look at the table leads to the following observations: 83.3 percent of the respondents from Bouawere report that the agent pays a visit to them once to twice a week, against 58.3 percent in Banamba, and 54.6 percent in Diouana. In contrast, 16.7 percent of the respondents from Bouawere, 41.7 percent of those from Banamba, and 45.4 percent of the respondents from Diouana, report that the agent pays a visit to them once every two weeks or less.

The desired amount of increase in the level of frequency of contacts, as stated by the interviewees, is presented in Table 4-20.

(Table 4-20 about here)

**Table 4-20: Desired Increase in the Level of Frequency of Contacts  
with the Change Agent by Subzone.**

| How much of an increase? | PERCENT OF RESPONDENTS |                  |                   |
|--------------------------|------------------------|------------------|-------------------|
|                          | Bouawere<br>(N=24)     | Diouna<br>(N=22) | Banamba<br>(N=12) |
| 1. A lot                 | 54.2                   | 72.7             | 41.7              |
| 2. No more               | 45.8                   | 27.3             | 58.3              |
| TOTAL                    | 100%                   | 100%             | 100%              |

A larger proportion of respondents from Diouna (72.7 percent) than from Bouawere (54.2 percent), than from Banamba (41.7 percent) say they want the level of frequency of contacts with the Ecabev agent increased a lot. The rest of the respondents want this level to stay the same. To some extent, these expressed desires are consistent with the statements given in Table 4-19. In the case of Diouna, the respondents' expressed desire for a greater increase in the level of frequency of contacts, is also consistent with their reporting that insufficient veterinary care is their most serious problem. However, 72.7 percent is much higher than the 45.4 percent derived from Table 4-19, this suggesting that we may have in the latter case a situation where "only some people state openly what most people think but avoid saying." In effect, a cross-tabulation of the reported level of frequency of contacts, and the desired increase in the level of frequency, points to more consistency in Bouawere (with a chi-square level of significance of .01) than in Banamba (.06 level of

significance), and in Banamba, than in Diouna where the chi-square level of significance is .3. In the case of Banamba, an important proportion of the respondents reporting they want no more increase in the level of frequency of contacts, indicates that either the actual level is satisfactory, or respondents feel they are able to conduct their business without any agents. With regard to the agent's teaching and suggestions, the respondents in general find them very important. This is reported by 87.5 percent of the respondents from the subzone of Bouawere, 77.3 percent of the respondents from Diouna, and 66.7 percent of those from Banamba. It seems, however, that the agents, in the zone of Segou, have not taken advantage of their contacts with their clients, and their relative credibility, to strongly induce the ideas of "working together and forming associations," as can be inferred from Table 4-21.

(Table 4-21 about here)

**Table 4-21: Agent's Communication about "Working Together" by Subzone. (Question: Has your agent ever talked to you about working together in the sense of organizing yourselves to get more from cattle feeding?)**

| Has agent ever<br>talked about working<br>together? | PERCENT OF RESPONDENTS |            |             |
|-----------------------------------------------------|------------------------|------------|-------------|
|                                                     | Bouawere(24)           | Diouna(22) | Banamba(12) |
| Yes                                                 | 29.2                   | 31.8       | 75.0        |
| No                                                  | 70.8                   | 68.2       | 25.0        |
| TOTAL                                               | 100%                   | 100%       | 100%        |

In the subsample of Banamba, 75 percent of the respondents say their agent talked to them about working together, when 31.8 and 29.2 percent, respectively, of the respondents from Diouna and Bouawere report the same thing.

However, the agents do take advantage of their contacts to provide their clients with advice about cattle feeding, and to instruct them about the rules and regulations of Ecibev in relation with on-farm cattle feeding.

The agents aside, the respondents talk to other people when they need advice with their cattle feeding business (Table 4-22).

(Table 4-22 about here)

**Table 4-22: Other Sources of Advice by Subzone.** (Question: The agent aside, to whom do you usually talk when you need advice with your cattle feeding activity?)

| Sources of Advice         | PERCENT OF RESPONDENTS |                  |                 |                   |                     |
|---------------------------|------------------------|------------------|-----------------|-------------------|---------------------|
|                           | Bouawere<br>(N=24)     | Diouna<br>(N=22) | Segou<br>(N=46) | Banamba<br>(N=12) | Aggregate<br>(N=58) |
| 1. A member of the family | 66.7                   | 77.3             | 71.7            | 83.3              | 74.1                |
| 2. A relative             | 29.2                   | 59.1             | 43.5            | 83.3              | 51.7                |
| 3. A close friend         | 45.8                   | 50.0             | 47.8            | 83.3              | 55.2                |
| 4. Another farmer         | 70.8                   | 63.6             | 67.4            | 100.0             | 74.1                |

Apparently, a greater proportion of cattle feeders from Banamba seek advice from, both a member of their family, a relative, a close friend, and another farmer, than from Diouna and Bouawere. All the respondents from Banamba talk to other farmers when seeking advice, but not all talk to either a member of their family, a relative, or a close friend, maybe because they are pragmatic, and aware of the fact that other farmers doing the same job as they themselves do, may know how to deal with specific problems related to this job, than mere family member, or relative, or even close friends. The same pattern is found among respondents from Bouawere. In Diouna, most of the communication takes place between the respondent and a member of his family, although 63.6 percent of the respondents also say they seek advice from another farmer.

In any case the agent is the person who provides most advice. He is followed by another farmer in both Banamba and Diouna, but by a relative in Bouawere. The second place attributed to another farmer in Diouna, and to a relative in Bouawere, is inconsistent with the respondents' report about the sources of advice. This indicates that there is a need for more investigation on this pattern.

The respondents also were asked about the number of cattle feeders in their villages, and the number of cattle feeders they talk to.

In Bouawere, the number of cattle feeders per village ranges from

two to nineteen, from five to twenty-five in Diouna, and from seven to thirty-eight in Banamba.<sup>3</sup> In Bouawere, 50 percent of the respondents say there are from ten to fourteen cattle feeders in their villages. In Diouna, 36.3 percent of the respondents report there are from fifteen to twenty cattle feeders in their villages, and 66.7 percent of the respondents from Banamba say there are from eight to twenty-five cattle feeders in their villages. Thus, the concentration of cattle feeders is greater in Banamba than in Diouna, in Diouna than in Bouawere.

The percentage number of cattle feeders the respondents say they talk to, is presented in Table 4-23.

(Table 4-23 about here)

This table indicates that 50 percent of the respondents from Banamba talk to all other cattle feeders in their village, against 41.7 percent in Bouawere, and 18.2 percent in Diouna. On the other extreme, 22.7 percent of the respondents from Diouna, and 8.3 percent of the respondents from Bouawere, do not talk at all to any cattle feeders. No such situation exists in Banamba where everybody talks to somebody else. In Bouawere, as in Banamba, the respondents tend to talk either to very few other cattle feeders, or to all of them.

A cross-tabulation of the number of cattle feeders in the villages at the knowledge of the respondents, and the number of cattle feeders the respondents talk to, shows that there is a relationship between

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<sup>3</sup> These figures are estimates by the cattle feeders themselves. However, these estimates do not deviate too much from the official figures.

**Table 4-23: Percent of Cattle Feeders the Respondents Talk to  
in Their Villages by Subzone.**

| Percent of Cattle<br>Feeders the<br>Respondents<br>Talk to | PERCENT OF RESPONDENTS |              |               |
|------------------------------------------------------------|------------------------|--------------|---------------|
|                                                            | Bouawere(N=24)         | Diouna(N=22) | Banamba(N=12) |
| 0%                                                         | 08.3                   | 22.7         | 00.0          |
| 1-20%                                                      | 16.7                   | 27.2         | 33.3          |
| 21-40%                                                     | 29.2                   | 13.6         | 16.7          |
| 41-50%                                                     | 04.2                   | 09.1         | 00.0          |
| 51-70%                                                     | 00.0                   | 09.1         | 00.0          |
| 71-99%                                                     | 00.0                   | 00.0         | 00.0          |
| 100%                                                       | 41.7                   | 18.2         | 50.0          |
| TOTAL                                                      | 100.0                  | 100.0        | 100.0         |

these two numbers. To be sure, a cross-tabulation of these two sets of figures, and the chi-square test of statistical significance point to the fact that the relationship among the two sets is significant at the level .0001, and the greater the number of cattle feeders in a village, the greater the number of cattle feeders a respondent talks to.

In general, in the occasion of communication that take place among cattle feeders, they exchange advice and viewpoints, and encourage one another with their cattle feeding business. However, it also happens that cattle feeders talk among themselves about working together. Thus, 83.3 percent of the respondents from Banamba, 27.3 percent of

those from Diouna, and 12.5 percent of the respondents from Bouawere, report that somebody else (the agent aside) talked to them about working together, and in almost all cases, this person was another cattle feeder.

In summary, this analysis of the communication patterns among cattle feeders in the three subzones leads to the following conclusions:

- a) The agent in Bouawere more frequently pays a visit to his clients than the agent in Banamba, and the agent in Banamba than the one in Diouna.
- b) There is a need for an increase in the level of frequency of contacts with the Ecibev agent among the respondents of all three subzones. But such a need is expressed by a greater proportion of respondents from Diouna.
- c) The data indicate that, in the zone of Segou, the agents have not addressed the problem of association formation with as much breadth as in the subzone of Banamba.
- d) A greater intra-familial, and inter-farmers types of communication take place among the respondents from Banamba than among those from Segou.
- e) One last observation pulled from the data is that the greater the number of cattle feeders in a given village, the greater the number of cattle feeders a respondent from that village interacts with.

The Issue of Cooperation: The respondents were asked a certain

number of questions in an attempt to get more insight about aspects of cooperation such as informal participation, cattle feeders' perception of cooperation, whether or not they have been involved in cooperative organizations in the past, whether or not they are currently members of any kinds of associations, and what kinds of associations they are.

In terms of informal participation, the data show that almost all the respondents from all three subzones find it somewhat to very important to them that they are able to spend some of their time with others. The data also show that most respondents (from 75 percent in Banamba, to 79.2 percent in Bouawere, and to 90.9 percent in Diouna) participate very often in activities performed in group. In each subzone and for each case, from 81 to 100 percent of the respondents report they like to take part in ceremonies of baptism and marriage, and in informal meetings with others, that they like to pay visits to friends and relatives, and to work with others. Therefore, in terms of informal participation, the respondents do not exhibit any significant difference across subzones. Similarly, almost all the respondents report that they think that cooperation is good, helpful, and profitable, and that it brings strength among cooperators.

According to the data, 66.7 percent of the respondents from Bouawere, 90.9 percent of those from Diouna, and 91.7 percent of the respondents from Banamba were members of one or more associations in the past. Table 4-24 presents the distribution of the respondents by kind of association and by subzones.

(Table 4-24 about here)

This table clearly shows that farming associations were by far the most popular form of association among respondents in all three subzones, but less popular in Bouawere than in Diouna and Banamba. Other forms of associations that existed were marriage associations, political organizations, and religious associations. And the respondents in general think these associations were somewhat to very helpful. At the level of the subzones, the respondents from Bouawere report neither religious nor marriage associations. Banamba also does not report religious associations.

**Table 4-24: Distribution of the Respondents by Kind of Association.**

| Kinds of Association      | PERCENT OF RESPONDENTS* |        |         |
|---------------------------|-------------------------|--------|---------|
|                           | Bouawere                | Diouna | Banamba |
|                           | (N=16)                  | (N=20) | (N=11)  |
| 1. Religious association  | 00.0                    | 05.0   | 00.0    |
| 2. Farming association    | 81.3                    | 85.0   | 81.8    |
| 3. Political organization | 25.0                    | 10.0   | 18.2    |
| 4. Marriage association   | 00.0                    | 15.0   | 09.1    |
| <hr/>                     |                         |        |         |
| Kinds of Association      | Bouawere                | Diouna | Banamba |
|                           | (N=24)                  | (N=22) | (N=12)  |
| 1. Religious association  | 00.0                    | 04.5   | 00.0    |
| 2. Farming association    | 54.2                    | 77.3   | 75.0    |
| 3. Political organization | 16.7                    | 09.1   | 16.7    |
| 4. Marriage association   | 00.0                    | 13.6   | 08.3    |

\*The top part of the table takes into account only respondents who are current members in associations whereas the bottom part concerns all respondents.

As for the present time, 45.8 percent of the respondents from Bouawere, 63.6 percent of those from Diouna, and 91.7 percent of the respondents from Banamba say they currently are members of some sort of association. In fact, the now existing forms of associations are the same forms that existed in the past. There is, however, one additional form composed of associations that deal with the cattle feeding business. Among these newly established structures are the system of representatives in the zone of Banamba, the association of farmers and cattle breeders of Toubra (a village in the zone of Banamba), and the non-permanent bean purchasing associations in the zone of Segou. These new structures, as well as the traditional farming association will be described in more detail later in this chapter. It is, however, surprising that none of the respondents mention the "ton villageois" which is meant to be the official structure for the development of cooperation in the rural areas of the country and which is mandated in every village (see above, page 5).

Relative to their status as current members of an association, the respondents were asked how they happened to join the organization. Their answers are reported in Table 4-25.

(Table 4-25 about here)

In Bouawere, 90 percent of the respondents report they have joined their associations because they have to. In Diouna, the respondents are evenly distributed among self-choice, initiators, and conformity, with election coming first. In Banamba, self-choice associated with the profit motive led a larger proportion of the respondents (45.5

Table 4-25: How Current Members Happened to Join Their Associations,  
by Subzone.

| How members join their<br>associations | Percent of Respondents |              |               |
|----------------------------------------|------------------------|--------------|---------------|
|                                        | Bouawere(N=10)         | Diouna(N=13) | Banamba(N=11) |
| 1. Election                            | 00.0                   | 28.6         | 36.4          |
| 2. Conformity                          | 90.0                   | 21.4         | 00.0          |
| 3. Initiators                          | 00.0                   | 21.4         | 18.2          |
| 4. Self-choice (profit<br>motive)      | 10.0                   | 21.4         | 45.5          |
| 5. Other                               | 00.0                   | 07.1         | 00.0          |
| TOTAL                                  | 100%                   | 100%         | 100%          |

percent) to join their associations, when 36.4 of them were elected.<sup>4</sup>

A cross-examination of current membership in various associations, and how the respondent happens to join an association, is attempted in Table 4-26.

(Table 4-26 about here)

<sup>4</sup>Conformity is used to describe a behavior which consists for a respondent to join an association because his father, and his grandfather were members in the same association in the past, and because every young person is expected to become a member in this association. In contrast, election refers to a situation where a respondent is brought at the head of a political organization by the vote of his peers. So, being a leader, he automatically becomes a member.

Tabel 4-26: Membership in Different Associations and How a Respondent Happened to be a Member. (N=35)

| Associations            | How a Respondent Happened to be a Member |             |             |             |       |           |
|-------------------------|------------------------------------------|-------------|-------------|-------------|-------|-----------|
|                         | Election                                 | Conformity  | Initiator   | Self-Choice | Other | Row Table |
| 1. Farming              | 1                                        | 7           | 0           | 1           | 0     | 9         |
| 1. Farming              | 02.9                                     | <u>20.0</u> | 00.0        | 02.9        | 00.0  | 25.7      |
| 2. Marriage             | 0                                        | 3           | 3           | 1           | 0     |           |
| 2. Marriage             | 00.0                                     | <u>08.6</u> | <u>08.6</u> | 02.9        | 00.0  |           |
| 3. Cattle feeding       | 3                                        | 0           | 2           | 5           | 0     | 10        |
| 3. Cattle feeding       | 08.6                                     | 00.0        | 05.7        | <u>14.3</u> | 00.0  | 28.6      |
| 4. Political            | 3                                        | 0           | 0           | 0           | 1     | 4         |
| 4. Political            | <u>08.6</u>                              | 00.0        | 00.0        | 00.0        | 02.9  | 11.4      |
| 5. Farming and Marriage | 0                                        | 2           | 0           | 1           | 0     | 3         |
| 5. Farming and Marriage | 00.0                                     | 05.7        | 00.0        | 02.9        | 00.0  | 08.6      |
| 6. Religion             | 1                                        | 0           | 0           | 1           | 0     | 2         |
| 6. Religion             | 02.9                                     | 00.0        | 00.0        | 02.9        | 00.0  | 05.7      |
| Column                  | 8                                        | 12          | 5           | 9           | 1     | 35        |
| Total                   | 22.9                                     | 34.3        | 14.3        | 25.7        | 02.9  | 100.0     |

Chi-square = 39.47; D.F. = 20; S = .006

Cramer's V = .53

Kendall's Tau C = .78; S = .28

According to the cross-tabulation, the members in traditional farming associations tend to join by conformity. Members in marriage associations join either by conformity, or because they are initiators. Members in political organizations are elected, when members in cattle feeding associations join mainly on the basis of their own choice, and because of a profit motive.

For those respondents who are not currently members in a cattle feeding related association, they almost unanimously report that they will be very enthusiastic to join such an association if it were formed.

As a summary to this section on cooperation patterns, it should be noted that the respondents in general view themselves as active informal participants. They think that cooperation is good, helpful, and profitable. However, a larger proportion of respondents in Banamba and in Diouna (the two subzones report almost the same percentage) than in Bouawere, report they were members in some sort of association in the past. As for the present time, a larger proportion of respondents from Banamba than Diouna, and from Diouna than Bouawere, report being current members in an association. These current members happen to join their association either by conformity, because they are elected, because they are among those who start the association, or simply by self-choice founded on the expectation of a profit. Conformist members are mainly recruited among respondents from Bouawere, when profit motivated members are mainly found in the subzone of Banamba. Finally, a cross-examination of data points to a close relationship between membership in the different associations on one hand, and how a respondent happens to be a member on the other hand.

Statistical Tests of Hypotheses: In Chapter 3, a certain number of hypotheses are formulated. In the operational model of the study, these hypotheses consist essentially of propositions that claim the existence of relationship between variables such as age of respondent, education, cosmopolitaness, business size, family size, past experience with cooperation, and change agent contacts on one hand, and the likelihood for an individual to embark on cooperative organization on the other hand. In the case of cosmopolitaness, the measures actually used are 1) whether the respondent has spent part of his life outside of Mali, and 2) how long the respondent stayed outside of Mali. The change agent contact is measured in terms of frequency of contacts between the change agent and the respondent, and whether the agent has talked to the respondent about working together. As for past experience with cooperation, the measures used are 1) whether the respondent has been a member in an association in the past, and 2) whether or not the respondent has found this association helpful. In this way, with the data obtained from the sample survey, each of these variables but education — since no respondents are educated — has been cross-tabulated with the dependent variable. The chi-square test of statistical significance is employed to establish whether or not a relationship exists between an independent variable and the dependent variable. In addition, Phi and Cramer's V are used to determine the strength of the relationship, and Kendall's Tau B and Tau C are used to determine whether a given relationship is positive or negative.

As appears in Table 4-27, age of respondent is found to be significantly related to current membership in general, but the relationship is curvilinear. This table shows that younger and older

respondents tend to be current members of associations, when respondents from age 41 to 60 tend to stay outside associations. However, no such correlation is found between age of respondent and membership in a cattle feeding association in particular.

(Table 4-27 about here)

Table 4-27: Age of Respondent and Current Membership in Association.

| Age of Respondent | Member in an Association |            | Row Total  | Member in Cattle Feeding Association |            | Row Total  |
|-------------------|--------------------------|------------|------------|--------------------------------------|------------|------------|
|                   | Yes                      | No         |            | Yes                                  | No         |            |
| 24-40             | 17<br>29.3               | 3<br>05.2  | 20<br>34.5 | 3<br>05.2                            | 17<br>29.3 | 20<br>34.5 |
| 41-50             | 6<br>10.3                | 7<br>12.1  | 13<br>22.4 | 2<br>03.4                            | 11<br>19.0 | 13<br>22.4 |
| 51-60             | 6<br>10.3                | 11<br>19.0 | 17<br>29.3 | 3<br>05.2                            | 14<br>24.1 | 17<br>29.3 |
| >60               | 7<br>12.1                | 1<br>01.7  | 8<br>13.8  | 2<br>03.4                            | 6<br>10.3  | 8<br>13.8  |

Chi-square = 13.24; D.F. = 3; S = .005  
 Cramer's V = .48  
 Kendall's Tau C = .21; S = .07  
 Chi-square = .44; D.F. = 3; S = .93

With regard to cosmopolitaness, Table 4-28 indicates that respondents who spent part of their life outside of Malá, are in general members in some sort of association. This relationship is significant at .01 level of chi-square. Here also an equivalent relationship is not found between spending part of one's life out of Malá and being currently a member of a cattle feeding association.

(Table 4-28 about here)

**Table 4-28: Stay Outside of Malá and Being a Current Member in an Association.**

| Stay Outside<br>of Malá | Current Member? |      | Row Total |
|-------------------------|-----------------|------|-----------|
|                         | Yes             | No   |           |
| Yes                     | 26              | 7    | 33        |
|                         | 44.8            | 12.1 | 56.9      |
| No                      | 10              | 15   | 25        |
|                         | 17.2            | 25.9 | 43.1      |
| Column                  | 36              | 22   | 58        |
| Total                   | 62.1            | 37.9 | 100.0     |

Chi square = 7.52; D.F. = 1; S = .01; Phi = 4

Kendall's Tau B = .4; S = .001

Similarly length of stay outside of Mali is found to be positively correlated to being a current member of an existing association. The chi-square level of significance is .05.

Business size -- that is, the number of cattle being fed by the respondent at the moment of the survey -- is positively related to being a member in a cattle feeding association, as shown in Table 4-29. And the relationship is stronger than any of the correlations precedently examined.

(Table 4-29 about here)

The two measures of past experience with cooperation -- whether the respondent has been a member in an association in the past, and whether or not the respondent has found this association helpful -- are not found to be significantly correlated to either current membership in general, or current membership in an association dealing with cattle feeding.

The data do not show any statistically significant correlation between family size and either kind of current membership. (Table 4-30).

(Table 4-30 about here)

Similarly, frequency of contacts between the change agent and the respondent does not by itself appreciably affect membership in a cattle feeding association. However, the content of the communication, whether or not the agent has talked to the respondent about working together, is found to be significantly correlated to membership in

cattle feeding association (Table 4-31).

(Table 4-31 about here)

**Table 4-29: Business size and membership in cattle feeding association.**

| Number of Cattle | Current Member |            | Row Total  |
|------------------|----------------|------------|------------|
|                  | Yes            | No         |            |
| 1-2              | 0<br>00.0      | 25<br>43.1 | 25<br>43.1 |
| 3-5              | 5<br>08.6      | 19<br>32.8 | 24<br>41.4 |
| > 5              | 5<br>08.6      | 4<br>06.9  | 9<br>15.5  |
| Column           | 10             | 48         | 58         |
| Total            | 17.2           | 82.8       | 100.0      |

Chi square = 14.68; D.F. = 2; S = .001; Cramer's V = .5

Kendall's Tau C = -.39; S = .0001

**Table 4-30: Number of Children as 51 Current Membership in  
Cattle Feeding Association.**

| Number of Children | Current Member |      | Row Total |
|--------------------|----------------|------|-----------|
|                    | Yes            | No   |           |
|                    | 1              | 8    | 9         |
| 1-2                | 01.7           | 13.8 | 15.5      |
|                    | 3              | 28   | 31        |
| 3-6                | 05.2           | 48.3 | 53.4      |
|                    | 5              | 8    | 13        |
| 7-10               | 08.6           | 13.8 | 22.4      |
|                    | 1              | 4    | 5         |
| 11-21              | 01.7           | 06.9 | 08.6      |
| Column             | 10             | 48   | 58        |
| Total              | 17.2           | 82.8 | 100.0     |

Chi square = 5.6; D.F. = 3; S = .13

**Table 4-31: Whether the Agent has Talked to the Respondent  
about Working Together and Current Membership  
in Cattle Feeding Association.**

| Has the Agent Talked<br>about Working Together? | Current Member |      | Row Total |
|-------------------------------------------------|----------------|------|-----------|
|                                                 | Yes            | No   |           |
| Yes                                             | 9              | 14   | 23        |
|                                                 | 15.5           | 24.1 | 39.7      |
| No                                              | 1              | 34   | 35        |
|                                                 | 01.7           | 58.6 | 60.3      |
| Column                                          | 10             | 48   | 58        |
| Total                                           | 17.2           | 82.8 | 100.0     |

Chi square = 10.38; D.F. = 1; S = .001; Phi = .47

Kendall's Tau B = .47; S = .0002

In addition to these variables of the study hypotheses, an investigation of the relationship between whether somebody else has talked to the respondent about working together and the respondent's current status with regard to membership in an association dealing with cattle feeding, has pointed to a positive, statistically significant, correlation, as presented in Table 4-32.

(Table 4-32 about here)

**Table 4-32: Whether Somebody Else Talked to the Respondent  
about Working Together and Current Membership  
in Cattle Feeding Association.**

| Has Somebody Else Talked<br>About Working Together? | Current Member |      | Row Total |
|-----------------------------------------------------|----------------|------|-----------|
|                                                     | Yes            | No   |           |
| Yes                                                 | 9              | 10   | 19        |
|                                                     | 15.5           | 17.2 | 32.8      |
| No                                                  | 1              | 38   | 39        |
|                                                     | 01.7           | 65.5 | 67.2      |
| Column                                              | 10             | 48   | 58        |
| Total                                               | 17.2           | 82.8 | 100.0     |

Chi square = 14.9; D.F. = 1; S = .0001

Phi = .56

Kendall's Tau B = .56; S = .0000

In summary, age of respondent, whether the respondent spent part of his life out of Mali, how long the respondent stayed outside of Mali, are found to be significantly correlated with current membership in general, but not with current membership in a cattle feeding association in particular. Family size, and past experience with cooperation, are not found to be significantly associated with either kind of membership. Similarly, frequency of contacts per se does not appear to appreciably affect membership. However, business size, whether the agent talked to the respondent about working together, and whether somebody else talked to the respondent about working together are found to appreciably affect the coefficient associated with membership in cattle feeding association.

In total, the data fail to support most hypotheses. However, other aspects that may be important have been revealed by the in-depth interviews.

The Traditional Farming Association and the New  
Cooperative Structures:<sup>5</sup>

a) The Traditional Farming Association: As evidenced in the preceding section, this form of association is popular enough among the respondents of Diouna and Banamba, less popular in the subzone of Bouawere. In a sense, it has become a culture pattern not only in the area of the study, but in rural Mali in general. This may explain partly why membership in this association is significantly correlated with conformity. Generally formed by young boys and girls, the farming association presents the characteristics of both an expressive and

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<sup>5</sup> This section is documented almost exclusively with information provided by the in-depth, informal interviews.

instrumental association. Insofar as it aims at working for remuneration on the plots of individual non-member-farmers, and at helping individual members in their farming with collective work, the traditional farming association is instrumental. Insofar as it pursues the organization of joyful celebrations at the convenience of its members, the farming association is of expressive type. Functionally, the traditional jobs performed by the "Ciketon"<sup>6</sup> consists of weeding, tilling, harvesting, and threshing of millet or sorghum. It seems, however, that more and more, the association is losing some elements of its traditional functions. This is the case for tilling to a great extent, due to the widespread adoption of pulled tillage, and the replacement of human labour by work animals. It also could become the case for threshing since cars and trucks are now taking on this job. More generally, it is not exaggerated to think that the process of progressive adoption of new technologies in the rural areas in Mali, is likely to result for the traditional farming association, in the loss of its usual functions. This situation could even be irreversible. Thus, it may not be too soon to think of alternative functions for the "Ciketon".

b) The System of Representatives: This system is the most commonly used in the zone of Banamba. It consists of appointing a cattle feeder to a post of intermediary between the credit agency (Ecibev) and the other cattle feeders of the subzone or village. In fact, the first generation of representatives were appointed directly by Ecibev. But recently, the cattle feeders themselves are involved in

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<sup>6</sup> Bamanan expressions for farming association.

the appointing of their representatives. Initially, the roles of these representatives were limited to listing the loan-seekers in their areas, bringing that list to the credit agency, receiving an amount of money from the agency, and distributing it among cattle feeders. However, the actual field situation renders the roles of representatives more complex and wider, involving frequent contacts with the change agent, centralization of peers' grievances, and, in some cases, reception, storage, and distribution of cottonseed, cottonseed cake, and salt. As a result of this reinforcement of the roles of the representative, he finds himself provided -- certainly not legally, but de facto -- with a relatively important power. Obviously, this system presents a certain number of deficiencies. For example, it explicitly addresses none of the problems the cattle feeders are encountering (mainly in the domain of marketing, and purchase of feeder cattle). More importantly, by leaving all the responsibilities with an individual, it does not allow for collective participation, and for democratic control. Thus, it is not surprising that the system of representatives is facing enormous difficulties in the zone of Banamba, the most common difficulty being lack of trust in the representatives as exemplified by these two conversations with two different interviewees from two different villages:

Example 1:

Question: Who brings your money (the loan)  
from the Ecibev agency?

Answer: "These last few years, it is X who  
brings our money. Unfortunately, we never  
get the amount of money we say we need.  
Nobody in this village gets the amount of

money he applies for. We're always told that Ecibev has not given enough money... And because of this situation, we held a meeting..., and we are in the process of withdrawing from X's organization, and of searching a representative of our own..."

Example 2:

Question: What kind of organization do you have here?

Answer: "Here, it is the system of "mandataire" (representative). At the beginning, we worked with Y. But finally we decided to have our own representative because there was a problem of trust. In effect, we noticed that cattle feeders from (village name) were not reimbursing their loan, and still continued receiving new loans. And we decided not to continue with them..."

These two examples show how important the moral dimension of individuals is to the stability of an organization. As pointed out by Comitas Lambros<sup>7</sup> in his study of Jamaican fishermen, a misunderstanding of the administration of group's affairs is likely to result in harm to cooperation.

c) The Association of Farmers and Cattle Breeders of Touba:

At the time of the survey, this association was in its third year of existence. In a sense, it emerged out of a conversation between two

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<sup>7</sup> Comitas, Lambros. Fishermen and Cooperation in Rural Jamaica, 1962, p. 210.

persons: an official from Ecibev, and an opinion leader from the village of Touba. The official of Ecibev made the suggestion of forming an association to the opinion leader, explaining to him that neither Ecibev, nor the government of Mali, could continue indefinitely to appoint agents in rural areas, and that the ultimate objective of the cattle feeding program was to lead the cattle feeders to self-reliance. The opinion leader in turn talked to people from the thirteen villages of the subzone, and one first meeting was decided and held in Touba. This meeting gave birth to the association of farmers and cattle breeders of Touba. As indicated in its name, the association was formed on the basis of two economic activities: cropping and livestock. In principle, the association was open to any farmers, cattle breeders or cattle feeders living in the "arrondissement" (district) of Touba, and willing to pay a yearly subscription of one thousand Malian francs, and to conform to the rules and regulations of the organization. For a cattle feeder willing to join the association, the subscription was five hundred Malian francs per feeder cattle being fed. For the functioning of the association, a committee of seventeen members was formed. Fifteen of these members were elected and the two others -- the chief of district and a representative of the political bureau of the district -- were ex officio members. In terms of objectives, the association aimed at seeking loans from credit institutions, not in the name of individual members, but in the name of the group as a whole. This loan could be either money (for cattle feeders), or farm-inputs like ploughs and fertilizers, which the association distributed to members expressing the need for them. So, the members only had to seek loans from their

association. They need not deal with an external organization. Provisions were made in the rules that enabled the association to collect its dues from members who are in arrears. However, when it was established that a given member was not materially in condition to meet a deadline and reimburse a debt, the association was ready to pay for this member, and to wait until he was in a better position. The association also aimed at realizing social programs for its members. For example, two years after it was formed, the association decided to purchase and stock food grains with the amount of money obtained from the subscriptions paid by the members. This stock of cereal was to be sold to the members at a relatively low price in periods of shortages. Another objective of the association was to promote communication among people in the area, and to work to put an end to cases of disagreement among villages in the subzone.

It seems, therefore, that the association of farmers and cattle breeders of Touba is a structured, contractual type of instrumental association dealing with various kinds of activities for the benefit of its members. It apparently puts to work the open-door policy principle, and the principles of voluntary association, democratic management, and self and mutual-help. In the entire area of intervention of the cattle feeding program, this association is considered an example of success, a model that should inspire cattle feeders from other parts of the zones of Banamba and Segou.

An attempt to investigate the factors that explain the ease with which this association was formed, and the success with which it had been working since then, pointed to the widespread credibility of the opinion leader who initiated the association.

In summary, in the area of the study, there exists both

traditional, and more recently established structures of cooperation. The traditional farming association is, however, losing part of its vitality, due to the invasion of its traditional function-areas by unintentional competitors. With regard to the new structures developed among cattle feeders, the system of representatives that may have served as a useful alternative in the past, does not seem to be an adequate structure for the long run. In contrast, the association of farmers and cattle breeders in Touba has a good reputation. But its replication poses before all the problem of identification of opinion leaders with some degree of credibility in other subzones of the cattle feeding activity.

## CHAPTER 5: CONCLUSIONS/RECOMMENDATIONS

This study of association formation among on-farm cattle feeders in the zones of Segou and Banamba leads to the following conclusions, and subsequent implications in terms of actions for the future:

1) With regard to the demographic characteristics of the respondents, and to cosmopolitanism, the respondents from Banamba are found to be older, to engage in polygynous unions more often, to have more children, and to be more cosmopolitan than respondents from the zone of Segou.

2) On the average, the respondents from Banamba have larger farm size, and make more money from cropping than their counterparts from the zone of Segou, this suggesting that the latter are needier in terms of implementation of programmes intended to help the small farmer.

3) The respondents in general find the cattle feeding business profitable. However, they are facing a certain number of problems. As for the aggregate data, their most serious problems are marketing, high market price of feeder cattle, and insufficient supply of cottonseed and salt. Although it is the feeling of officials from Ecibev<sup>8</sup> that the quantities of salt and cottonseed being provided to farmers are sufficient, it may be important to consider the fact that the individual cattle feeder does not make any difference between his feeder cattle and his work animals in terms of responsibility to feed them all. In addition, across zones, there is a considerable

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<sup>8</sup> Personal communication.

difference in the listing of both the major problems and the suggested solutions. And it seems that an analysis of problems at the level of subzones, when deciding about actions, will be of greater benefit to cattle feeders.

4) The respondents in Banamba are feeding more cattle, but are less directly involved in performing the cattle feeding related tasks than those from Segou.

5) In terms of communication, the agent in Bouawere more frequently pays a visit to his clients than the agent in Banamba, and the agent in Banamba than the one in Diouna. But on the aggregate, there is a need for an increase in the level of frequency of contacts with the agent among the respondents of all three subzones. The data also indicate that, in the zone of Segou, the agents have not addressed the problem of association formation with as much breadth as in the subzone of Banamba. There is, therefore, a need for sensitization, for publicity among the farmers of the Segou zone on the topic of association. As Belloncle<sup>9</sup> argues, farmers' organizations need to be brought about, and promoted by development agencies. It is unlikely that they come into being by themselves, spontaneously. Another fact evidenced by the data is that the greater the number of cattle feeders in a given village, the greater the number of cattle feeders a respondent talks to. The implication of this finding will be addressed later.

6) With regard to informal participation, the respondents do not exhibit any significant difference across zones. Similarly, they think that cooperation is good, helpful, and profitable, this suggesting the

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<sup>9</sup> Guy Belloncle, 1982, pp. 58-61.

existence, at least in appearance, of a potential for the development of cooperative structures among cattle feeders in both zones. The forms of association existing in the two zones are the traditional farming association, marriage and religious associations, political organizations, and more recently, the system of representatives, the bean purchasing associations, and the association of farmers and cattle breeders of Touba, the first on the list being the most popular. It seems that the traditional "Ciketon" is facing threats from unintentional competitors, and that there is a need to think of alternative functions for this structure. The system of representatives is faced with the problem of trustworthiness, and it does not seem to be an adequate structure for the future. In contrast, the association of farmers and cattle breeders in Touba is enjoying a good reputation. Apparently, its success is mainly related to an opinion leader and the credibility this leader has among the cattle feeders of the subzone. Thus, the replication of this form of association -- which seems a good alternative to consider -- poses the problem of identification of credible opinion leaders in the other subzones of the cattle feeding activity.

7) With regard to the study hypotheses, the tests of statistical significance support the assertion that business size, whether the agent talked to the respondent about working together, whether somebody else talked to the respondent about working together, positively affect the respondent's decision to embark on a cattle feeding association. The implications of these findings are many. First, these findings suggest an increase in the number of feeder cattle to cattle feeder, particularly in the zone of Segou. However, this should be done with

great care. In effect, more cattle to farmer means more profit from cattle feeding, but also more investment of labour and resources, maybe at the expense of the traditional cropping activities. Thus, a decision to augment the number of feeder cattle to farmer beyond a certain limit is likely to result in a major shift among cattle feeders, with the traditional farmer engaged in cattle feeding becoming a modern cattle feeder doing some cropping. Another implication of the finding is the necessity to lead the agents in the field to diffuse with more breadth and depth the idea of association formation and its relevance to the cattle feeding business. In other words, the agents should work to "get themselves out of business". And this is unlikely unless there is a guarantee for the agents that their good work will not result for them in unemployment. One third implication is that it may be useful to encourage communication among cattle feeders themselves. And since a great number of cattle feeders in a given village is associated with more communication among cattle feeders in this village, it may be important to give the opportunity to more farmers per village to become cattle feeders, with a particular emphasis on the zone of Segou.

The data also indicate that age of respondent, whether the respondent spent part of his life outside of Mali, and for how long, are significantly correlated with current membership in general, but not with current membership in a cattle feeding association, this suggesting a need for more investigation about these variables and their inter-relationships.

Finally, it is the feeling of the writer that this study and its findings and suggestions, should not close the debate on the topic of on-farm cattle feeding in Mali. Rather, it would be of greater benefit

to all if more investigation could follow in the future. For example, it is obvious that an investigation aimed at identifying opinion leaders in the two zones was beyond the reach of this study, because of insufficient time, and also because such an investigation will be better achieved by combining the sample survey used here, and the participant observation method. Another area for research could be about the cattle feeders' knowledge in cattle feeding, and why they do not strictly follow all the advice or instructions they receive from the agents. An example is found with the cleaning of the cattle-shed. From the veterinarian's view of the agent, a cattle-shed should be always clean to prevent certain diseases from occurring. From the standpoint of the empirically-based-agronomist (the farmer), the hay provided to cattle is viewed both as a feed, and as a fertilizer; and the more cattle walk on the remaining hay left over their feed, the more fertilizer results. Thus the tendency of some cattle feeders to not clean the cattle-shed so often. Still another aspect one may find useful to look into is whether the breed of feeder cattle in one zone fattens up more easily than in the other zone, and the extent to which such difference (in zootechnic performance) affects prices, levels of profit, and hence the interest of a farmer for the cattle feeding business.

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## APPENDIX

## APPENDIX

### QUESTIONNAIRE

Zone : \_\_\_\_\_ Date of interview: \_\_\_\_\_  
Sub-zone : \_\_\_\_\_ Interview number : \_\_\_\_\_  
Village : \_\_\_\_\_ Name of Interviewee: \_\_\_\_\_

#### ENTRY / STATEMENT

of CONFIDENTIALITY : My name is Cheick Kamate. I am from this country. For the last 30 months, I was in the U.S as a student. My training there is almost completed. One last requirement was to come back home, and conduct a survey of farmers who are currently engaged in on-farm cattle feeding operation. Participants to this study have been selected in a peculiar way. It is therefore very important that every selected farmer participate fully. Your answers to all questions are, of course, voluntary, and they will be kept completely confidential. Information that might identify you will never be seen by anyone, and I am interested rather in the aggregate data that will be obtained from all the respondents. I thank you in advance for your cooperation.

#### A/ CROPPING SYSTEM and FARM SIZE:

A1. First, let me ask about the general situation of harvests in your area. Would you say that harvests this year were excellent, good, fairly good, or poor?

4 - Excellent

3 - Good

2 - Fairly good

1 - Poor

A2. Which crops have been most successful, food crops or cash crops? (Check one)

a) Food crops

b) Cash crops

c) None

.../...

A3. What are the crops you grow? Do you grow

|                     | Yes | No |
|---------------------|-----|----|
| a - Sorghum         |     |    |
| b - Millet          |     |    |
| c - Cotton          |     |    |
| d - Maize           |     |    |
| e - Peanut          |     |    |
| f - Rice            |     |    |
| g - Tabacco         |     |    |
| h - Potatoe         |     |    |
| i - Beans           |     |    |
| j - Cassava         |     |    |
| k - "fonio"         |     |    |
| l - other (specify) |     |    |

A4. Check point - Refer to question A3.

R. grows 4 or more crops

R. grows less than 4 crops

Go to question A6

A5. Of all the crops you say you grow, what are three most important in terms of the proportion of Land devoted to them?

a) \_\_\_\_\_

b) \_\_\_\_\_

c) \_\_\_\_\_

A6. About how many hectares each of these crops occuppies?

a) 

|  |  |
|--|--|
|  |  |
|--|--|

 ha

b) 

|  |  |
|--|--|
|  |  |
|--|--|

 ha

c) 

|  |  |
|--|--|
|  |  |
|--|--|

 ha

.../...

A7. Of all the crops you say you grow, which one do you consider  
as most beneficial to you?

\_\_\_\_\_

A8. Why is that?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

A9. Do you raise all the food consumed in your household?

**Yes**  
Go to A11

**No**  
↓

A10. What proportion of your household  
food do you raise?

\_\_\_\_\_

A11. In total, about how many hectares of Land do you hold?

Number of hectares 

|  |  |
|--|--|
|  |  |
|--|--|

A12. Is this Land your property or you hold it from somebody else?

**R.'s property**  
Go to A14

**Somebody else land**  
↓

A13. What are the conditions for  
holding this Land? Do you

a) pay money for it?

b) share the crops with the  
Land owner?

c) hold it for nothing?

d) hold it under other conditions?  
(specify)

.../...

A14. In your farming do you use

|                | Yes | No |
|----------------|-----|----|
| a- Plough      |     |    |
| b- Oxen        |     |    |
| c- Cart        |     |    |
| d- hired Labor |     |    |

A15. Do you own these tools or do you borrow them?

☐ Own

☐ Borrow

A16. Do you sell some of the crops you raise?

☐ Yes

☐ No

Go to B

A17. About how much money on the average do you get from cropping every year?

Amount of money \_\_\_\_\_

A18. Do you grow legume hay every year?

☐ Yes

☐ No

A19. Do you use all the  
Legume hay you produce for  
your cattle, or sell part  
of it?

Use all

Sell part

A20. Why don't you grow legume hay every year?

---

---

A21. How then do you arrange to provide your feeder cattle with legume hay?

---

---

...../...

- 5 -

B/ CATTLE FEEDING ACTIVITY: As I told you at the beginning of the interview, we will be talking mainly about on-farm cattle feeding.

B1- How long have you been working with the cattle feeding project?

Number of years

B2- Checkpoint. Refer to question B1

R. has been feeding cattle for at least 2 years

R. has been feeding cattle for less than 2 years

Go to question B7

B3- How many cattle have you fed your first year of activity?

Number of cattle

B4- How many cattle have you sold your first year of activity?

Number of cattle

B5- How many cattle have you fed last year?

Number of cattle

B6- How many cattle have you sold last year?

Number of cattle?

B7- How many cattle are you currently feeding?

Number of cattle

B8- During the period from January to April, how much of your time do cattle feeding activities take?

4 - All your time

3 - Almost all your time

2 - An important part of your time

1 - Only a small part of your time

B9- To what kinds of tasks of the cattle feeding operation do you devote that portion of your time? (check all that apply)

.../...

- a- Looking for feeder cattle to buy
- b- Looking after your cattle
- c- Bringing feed to your cattle
- d- Providing them with veterinary care
- e- Cleaning the cattle-shed
- f- Meeting with other farmers or the project agent to discuss problems related to cattle feeding activity
- g- Looking for potential buyers to whom to sell your fed animal(s)
- h- Taking your fed animal(s) to the market-place
- i- Other (specify)

Yes No

|  |  |
|--|--|
|  |  |
|--|--|

B10- Of these tasks you say you devote your time to, indicate the two of them that take most of your time.

- a) \_\_\_\_\_
- b) \_\_\_\_\_

B11- Now, how profitable is to you the on-farm cattle feeding business?

4 - Very profitable

3 - Somewhat profitable

2 - A little profitable

1 - Not at all profitable

B12- In your view, what are the most important problems you encounter in the cattle feeding operation?

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_

B13- What do you think can be done to make the project more successful?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

C/ INTERACTING WITH OTHERS:

Now, I want to ask some questions about your relations with the ECIBEV agent working in your area on one hand, and with the other farmers involved in the cattle feeding activity on the other hand.

C1. In general, how frequently does the ECIBEV agent pay a visit to you, twice a week, once a week, once every two weeks, or less than once every two weeks?

4 - Twice a week

3 - Once a week

2 - Once every two weeks

1 - Less than once every two weeks

C2. What do you think about the present level of frequency of contacts with the agent? Would you say you want the level of frequency of contacts

1- A lot increased

2- A little more increased

3- About the same

4- A little decreased

C3. How important are to you the suggestions of the agent with regard to on-farm cattle feeding?

4 - Very important

3 - Somewhat important

2 - A little important

1 - Not important

C4. Has your agent ever talked to you about working together, in the sense of organizing yourselves to get more from cattle feeding?

Yes

No

Go to C7

C5. What did he say?

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---

---

C6. What do you think of that?

---

---

---

C7. What else does the agent usually talk to you about?

---

---

---

C8. The agent aside, to whom do you usually talk when you need advice with your cattle feeding activity?

a- A member of your family

b- A relative

c- A close friend

d- Another farmer involved in the project

e- Somebody else (specify)

| Yes | No |
|-----|----|
|     |    |

C9. From which top two persons do you think you get most of your advice?

1. \_\_\_\_\_

2. \_\_\_\_\_

C10. How many farmers in the village are involved in the on-farm cattle feeding project at your knowledge?

Number of farmers

|  |  |
|--|--|
|  |  |
|--|--|

C11. To how many of them do you usually talk about questions having to do with on-farm cattle feeding?

Number

|  |  |
|--|--|
|  |  |
|--|--|

C12. In general, what do you talk about, you and those farmers you usually talk to?

---

---

---

C13. The agent aside, has anybody else ever talked to you about group action in the sense of cooperation?

Yes

No

Go to C17

C14. Is this person a member of the project?

Yes

No

C15. What did this person say to you about group action?

---

---

---

C16. What do you think of that?

---

---

---

C17. How important is it to you that you are able to spend some of your time with others.

4- Very important

3- Somewhat important

2- A little important

1- Not important at all

C18. How often do you actually participate in activities that are performed in group?

4- Very

3- Somewhat

2- A little

1- Not at all

C19. Do you like to take part in the following activities:

- a. Ceremony of baptism
- b. Ceremony of marriage
- c. Informal meetings under the tree of the village
- d. Working with others
- e. Visit to a friend or a relative
- f. Working alone.

Yes

No

|  |  |
|--|--|
|  |  |
|--|--|

C20. What do you think about cooperation among farmers?

---

---

---

**D/ EXPERIENCE WITH COOPERATION:**

D1. Are you currently a member of an association (or group)  
that involves doing things together?

Yes

No

Go to D7

D2. What is this association for?

---

---

D3. How did you happen to be a member of the association?

---

---

D4. Which of the following activities are you performing as a member  
of the association?

- a- Using the association for buying and/or selling?
- b- Attending meetings?
- c- Asking people to join the association?
- d- Playing a leadership's role?
- e- Other (specify)?

| Yes | No |
|-----|----|
|     |    |
|     |    |
|     |    |
|     |    |
|     |    |

D5. How do you feel about your association? Do you feel very lucky of  
having it, somewhat lucky, a little lucky, or unlucky?

4- very Lucky

3- Somewhat Lucky

2- A little Lucky

1- Unlucky

D6. In you view, what can be done to make the association more effective?

\_\_\_\_\_

\_\_\_\_\_

D7. Have you been a member of an association in the past?

Yes

No

Go to D11

D8. What was this association for?

\_\_\_\_\_

\_\_\_\_\_

D9. How long have you been a member of this association?

\_\_\_\_\_

D10. How helpful to you was this association? Would you say it was very helpful, somewhat helpful., a little helpful, or not at all helpful?

4- Very helpful

3- Somewhat helpful

2-A little helpful

1- Not at all helpful

D11. Checkpoint. Refer to questions D1 and D2.

R. is currently a member of an association dealing with cattle feeding matters

Go to E

R is not a current member of an association or R's current association has not to do with cattle feeding operation

↓

D12. If an association is formed in your area to help farmers engaged in on-farm cattle feeding operation, how enthusiastic will you be to become a member of this association?

4- Very enthusiastic

3- Somewhat enthusiastic

2- A little enthusiastic

1- Not enthusiastic

E/ BACKGROUND INFORMATION: Now I am going to ask some question about yourself.

E1. How old are you?

Age

E2. How long have you been living in this village?

\_\_\_\_\_ ;

E3. Are you married?

☐ Yes

☐ No

Go to E13

E4. How many wives do you have?

☐ One  
wife

☐ two

☐ three

☐ four

☐ More than four

E5. Do(es) your wife/wives help you with your cattle feeding tasks?

☐ Yes

☐ No

Go to E7

E6. How much of the time of your wife/wives does on-farm cattle  
feeding activity take?

☐ 5- All her /their time

☐ 4- Almost all her/their time

☐ 3- An important part of  
her/their time

☐ 2- Only a small part of her/their time

☐ 1- None of her/their time

E7. Do you have children?

☐ Yes

☐ No

Go to E13

E8. How many children do you have?

Number

E9. Age and sex of each child.

| Order | Age | Sex |
|-------|-----|-----|
| 1.    |     |     |
| 2.    |     |     |
| 3.    |     |     |
| 4.    |     |     |
| 5.    |     |     |
| 6.    |     |     |

E10. Checkpoint. - Refer to question E9

R. has both sons and daughters

R. has only sons or only daughters

Go to E12

E11. Do you think that your daughters contribute more, about the same, or less than your sons in helping you with your cattle feeding operation?

1- More

2- About the same

3- Less

E12. How much of the time of your children does on-farm cattle feeding activity take?

5- All their time

4- Almost all their time

3- An important part of their time

2- Only a small part of their time

1- None of their time

E13. Now, let talk about education - Have you been to "French School"?

Yes

No

Go to E15

E14. How many years have you spent to French school?

Number of years

E15. Have you been to "Madersa school"?

Yes

No

Go to E17

E16. How many years have you spent there?

Number of years

E17. Have you received some "Baliku Kalan"?

Yes

No

Go to E20

E18. How many years of training have you had from "Baliku School"?

Number of years

E19. Do you read the Newspaper "Kibaru"?

Yes

No

.../...

E20. Have you spent part of your life out of Mali?

Yes

No

End of interview

E21. Which country/countries is that?

\_\_\_\_\_

E22. How long have you stayed in this/these countries?

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

E23. What kind of occupation did you have there?

\_\_\_\_\_

E24. Why did you decide to come back home?

\_\_\_\_\_

\_\_\_\_\_

These are all the questions I have. Thank you for your help.

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