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Michigan State University Contract Team
USAID Integrated Rural Development Project
ORD de l'Est, Fada N'Gourma, Upper Volta

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I. INTRODUCTION

This is the fourth six month report produced by the Michigan State University contract team working as the technical assistance component of the USAID Integrated Rural Development Project in the Eastern ORD of Upper Volta. By the end of the current reporting period four MSU team members had completed two years of field work in Upper Volta; the fifth team member had been in country for nine months.

While this would have been a logical point in time to produce a more detailed, interpretive report of team accomplishments, this report does not attempt to do so. There are several reasons for delaying the production of such a report. First, USAID and the Government of Upper Volta have agreed in their request for the MSU contract team to remain in Fada for another two year period. The MSU contract is currently funded through December, 1979 with additional funding anticipated for the period January 1980 through June 1981. Second, major analytical results from the 1978-79 farm level survey will be available in the next six to eight months. By the end of this period a detailed analytical picture will be available of traditional agriculture and improved farming systems - with the latter focusing primarily on the introduction, use, and cost and return to animal traction.

The reader who has not read the previous three MSU six month reports may find the discussion of certain topics somewhat summary or incomplete. He is encouraged to consult these previous reports for a more complete picture of major topics presented in the current report.

As stated in previous reports, the contract team welcomes any comments, criticism or requests for further information on material discussed in this report. Every effort will be made to respond directly in writing and to incorporate useful suggestions in future reports.

II. ANIMAL TRACTION

A. Introduction

The animal traction program in the Eastern ORD remains the key to increasing productivity and total crop production for the vast majority of the region's farmers. The program consists of

the following elements: -Equipment assembly and distribution,
-Providing credit in kind for equipment and
in cash for purchase of animals,
-Training of extension service personnel,
-Animal feeding and health care, and
-Extension of animal traction technology at
the farm level.

Unfortunately the ORD has not been able to accord proper support to each of the various elements of the traction program during the last six months. Since October, 1978 there has been no Voltaic effectively in charge of the animal traction sub-section. Delivery of equipment and credit for animal purchases is late again this year. An official list of prices for equipment has not yet been published. Veterinary care and feeding of draught animals has not improved substantially over the last six months. There has been progress however, in the training of ORD staff; in the extension of animal traction technology; and in teaching extension agents and farmers the prerequisite conditions under which animal traction can be profitable for a given farmer.

Because of the lack of a full-time sub-section chief, the MSU livestock technician was forced to spend most of his time running the animal traction program on a day-to-day basis. This greatly reduced his ability to promote the introduction of program changes with a long term impact on the feeding and health care of draught animals as envisioned in his work plan. The technician's report is thus largely concerned with the "nuts and bolts" operation of the program.

B. Action Programs

1.) Seminar on Animal Traction. In December, the livestock technician wrote a critique of the ORD animal traction program which served as the basis of a seminar for sector chiefs and concerned personnel from the central office. The critique was based on the Credit Inventory conducted by the BDC Credit and Cooperatives Section, the BAEP Farm Level Survey, and the experience of the Animal Traction Sub-Section from the previous year. This seminar resulted in several proposals to improve the system which have since been put into effect:

- a) Priority was given to the manufacture of donkey plows for the 1979-80 agricultural campaign due to high demand for them and to the existence of a large stock of bovine plows.
- b) Encadreurs were directed to inspect farmers' equipment and to advise them to replace used parts.

c) A proposal to give support to local artisans for the manufacture of yokes, harnesses and spare parts was adopted.

d) A program of extension agent training was developed and is being carried out.

e) A program for the vaccination and marking of draught animals was adopted. However, the equipment necessary for implementation did not arrive until the end of May. The program has been delayed until next October because many areas are inaccessible during the rainy season.

f) Preliminary results of the BAKP farm survey concerning animal traction use (seen pp 2-3 of the June to November 6 month report for 1978) were presented to show the need to encourage increased use of draught animals through weeding, ridging and transport work.

2.) Completion of Animal/Equipment Packages. Following the publication of the Credit Inventory by the Credit and Cooperatives Section, the Director of the ORD assigned high priority to providing equipment and credit for animals to farmers who had received incomplete animal traction packages. Beginning in February, equipment and credit for animals were distributed to all eight sectors of the ORD. This program has now been completed in seven of the eight sectors.

In order to avoid future problems with incomplete equipment, the ORD has decided to encourage farmers to accept the total animal traction package including weeders and ridgers. Hopefully, this will increase farmers' use of their animals which, as shown in the last MSU six month report, is unacceptably low.

3.) Animal Trainers. To improve the extension of animal traction technology, the ORD has begun to train farmers as special agents. The responsibilities of these specialists are to train oxen, and then to instruct farmers in all of the new techniques associated with the traction program, such as care and feeding of animals and the weeding of fields. Six trainers have now been placed in five sectors. The livestock technician has helped to supply these trainers with equipment and has visited each of the trainers to ensure that their work is progressing smoothly. The program appears to be a tremendous success as these specialists are very enthusiastic, hard working men who relate well with their fellow farmers.

4.) Supply of Equipment for Animal Traction. The livestock technician has served as a liaison between the central supply depot in Guagadougou and the regional manufacturing cooperative for expediting the supply of raw materials for the fabrication of traction equipment.

In collaboration with the head of the ORD Mechanisation section the technician supplied raw materials and supervised the manufacture of accessories such as yokes, harnesses and spare parts. The ORD is now in a good position to supply farmers with most of the material they need. Unfortunately donkey plowshares are not available nationally and are manufactured in only small quantities locally. A limited number of single ox yokes have been supplied to farmers to encourage the use of this promising intermediate type of traction.

5.) Training of Extension Agents. To improve the necessary extension follow-up of animal traction a short course was given to all sector and sub-sector chiefs on the feeding and choice of draught animals. A technical manual written by the technician for extension agents was also provided. Included in this session was a description of the principle illnesses which affect working animals in Upper Volta.

In May, the head of the Mechanisation Section and the livestock technician gave a second short course on the use of animal traction equipment for plowing. The following subjects were presented:

- a)-Objectives and benefits of plowing
- b)-Erosion control
- c)-Presentation of equipment for plowing and assembly of equipment
- d)-Nomenclature of plow parts to facilitate the ordering of spare parts
- e)-Adjustment of equipment to regulate depth and width of plowing
- f)-Techniques of plowing
- g)-Practical demonstration of plowing

6.) AID Livestock Extension Agents. The livestock technician has tried to supply livestock extension agents who work in the AID Intensive Zones with basic material for their work. Unfortunately a lack of coordination between AID and the ORD has impeded these efforts.

7.) Village Livestock Project. The ORD has missed a real opportunity to have basic and essential research done on the livestock sector of the region. In spite of efforts to improve communication between the ORD and the AID-funded project, the project technicians have become discouraged with what they feel is a lack of cooperation and receptivity from the ORD, and they have scaled down their activities in the Eastern region.

8.) Provision of Feeds for Dry Season Maintenance of Draught Animals. Despite the goodwill of everyone involved, the program to sell cotton seed for draught animal maintenance was not implemented this year. Very little cotton seed was available until April when,

due to breakdowns, there were no trucks available for transport. This underlines the importance of local production of forages.

C. Applied Research on Animal Traction

1.) Field Trials. In collaboration with the BAEP and the Seed Production and Agronomic Trials Section of the BPA, field trials were designed to determine the yield effects of plowing and the use of natural phosphate fertilizer. The trials are being placed in the peanut and sorghum fields of 42 farmers.

The specialist also completed a livestock inventory questionnaire and a supplementary questionnaire on animal traction for the 1978-79 farm survey.

2.) Forage Crop Trials. In spite of problems encountered with forage trials last year,¹ certain results were encouraging. The conclusion of a special report² on the trials included the following points:

- a) Forage crops planted on fallow land are very difficult to protect without expensive fencing.
- b) The best means of introducing forages is by intercropping forage legumes with food crops.

-A cowpea variety, "Vita I", produced over 12.5 tons of green matter/hectare in association with a Sorghum variety. However, "Vita I" is a spreading variety which makes weeding with animal traction difficult. It is also very susceptible to insect attacks. An upright variety, resistant to insects would have great potential.

-A mung bean variety, "MC-55", produced over 6.5 tons/hectare in a pure stand. This has the advantage of being upright and resistant to insects while, at the same time, having a fairly short growth cycle.

- c) The following forage legumes produced very well either in pure stands or in association with forage grasses (Cenchrus ciliaris and Brachiaria ruziziensis)

-Macroptilium atropurpureum (Siratro) produced over 3 tons/hectare of green matter in a pure stand and in association

1 Third Six Month Report of MSU Team, June - November, 1978, pp. 4-5

2 "Observation Trials on Forage Crops during the 1978-79 Campaign." Available in French from Equipe MSU; B.P. 35; Ambassade Americaine; Ouagadougou, Haute Volta

with *Cenchrus ciliaris*. It did not do well with *Brachiaria*. However, this species remained green through February, long after all other species had died and after it had been heavily pastured.

-*Stylosanthes gayanus* (or *gracilis*) produced over 2.5 tons/hectare of green matter and competed well with forage grasses.

-*Stylosanthes hamata* and *Alysicarpus vaginalis* look promising and should be tried further in the northern parts of the ORD.

d) *Brachiaria ruziziensis*, a forage grass, produced well in Fada and Pama (over 2.5 tons/hectare dry matter on pure stands and over 3.5 tons/hectare in association with legumes in Fada).

-Farmers in Pama and Soudougui were very interested in obtaining seeds of *Brachiaria* and *Stylo gayanus* for use on their own farms.

D. Recommendations for Improving the Animal Traction Program

1.) Distribution of Credit for the Purchase of Draught Animals. Currently credit for the purchase of donkeys and oxen is distributed in May and June. This has a number of undesirable effects:

a) In their haste to buy animals before the plowing season, farmers do not have enough time to make a good choice. This problem is especially acute in the Diabo sector where oxen are scarce and farmers must go as far as Pouytenga¹ to buy them.

b) Animals bought off the range in May are in a very poor nutritional state. They are then forced to undergo the stress of castration, placement of noserings, and training. Farmers who buy the animals rarely stock sufficient feed for the dry season because they are not certain of receiving credit. They are forced to feed low quality, standing hay from the range during this period, whereas they should feed a rich ration sufficient for work and fattening the animals. The result is that many animals become sick, or die, or are too weak to work.

1 Pouytenga is a large livestock market located 65 kilometers from Diabo.

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Distributing credit for draught animals in October would resolve this problem.

- a) Farmers would have sufficient time to make a good choice.
- b) The animals would be in their best nutritional state since they would have pastured on lush rainy season range for four months.
- c) Farmers would be able to stock crop residues for dry season maintenance rations so that the animals would be in good shape for the plowing season.
- d) There would be plenty of time to train the animals well before the field work season begins.
- e) Oxen are cheaper in November and December since herders are forced to sell their animals to pay for feasts and taxes.
- f) Farmers would be able to buy from local Fulani herders before they go on transhumance, and thus they could buy from someone they know. This has an additional advantage that runaway oxen tend to return to their native herd and they are easier to find if the herd is nearby.

2.) Pricing of Equipment. For two years now, the ORD has issued a price list for animal traction equipment after farmers have received this equipment. This results in much confusion about prices and farmer distrust of the ORD when they see several different prices being applied. To rectify this situation, a complete price list for the coming year should be made available by March.

3.) Artisan Cooperative. Greater attention should be paid to creating a cooperative of rural artisans to enable them to receive credit from the ORD and to encourage them to produce spare parts and accessories on their own. In collaboration with the CNPAR,¹ a stock of raw materials should be maintained in Fada and artisans should be encouraged to supply themselves without ORD help. In this manner, the ORD could limit its involvement to management of the stock and to final product marketing in areas where there are no rural artisans. More of these artisans (especially blacksmiths and carpenters) should be trained.

¹ Centre National de Perfectionnement des Artisans Ruraux

III. AUDIO-VISUAL SECTION

During phase II of the specialist's work plan the primary objectives were the organization and division of labor, personnel training, and the establishment of an ORD audio-visual workshop and offices. For the most part these objectives were met. Due to the lack of personnel during the first three months of the year, most of the following activities took place during the last three months of the report period. The following are the objectives that were set forth in the work plan, results obtained and comments.

A.) The radio clubs and the rural radio programing need immediate attention in both organization, scheduling, division of labor and personnel training.

1) Formation of a program schedule of relevant topics. During the report period all ORD bureaus were contacted and asked to submit a monthly prioritized list of relevant topics to establish a yearly radio programming schedule. These lists were compiled into a preliminary schedule and resubmitted to the bureaus for their observations and suggestions. Once these preliminary schedules have been reviewed, a firm radio schedule of timely topics will be finaniled in order that programs will be given ample (two months) time for research and development. One of the workshop personnel will be responsible for this pre-programming effort and translation.

2) Attention will be given to the design and format to produce interesting and lively messages. The former format of a "mini lecture" of a technical nature which was in the most part read by the announcer has been changed to a more traditional "causerie" (dialogue) style by two announcers. In the future, attention will be given to experimenting with other approaches such as presenting information in story form more directly related to the village experience and interviews in the field; the specialist found that attempting to change this work pattern of a mini lecture taken from technical papers was met with resistance and reluctance by the personnel and realized that such attitudinal changes would take time and perseverance.

3) A mini radio studio will be established in order that the bureau can produce its own recording and programming without going to Ouagadougou for recording sessions. All mini studio equipment was ordered through the central offices of the Radio Rurale to comply with their installations and technical services. The equipment should arrive before September 1979 and will be installed before the end of the year. Plans for the mini studio have already been drawn up and construction will be in conjunction with the darkroom,

4) Cin -bus Operation. A Toyota Land Cruiser wagon was installed with loudspeakers, a battery operated amplifier and mixer, microphones, cables, and cassette tape recorders on May 11, 1979. Installation was done by Rural Radio in Bobo-Dioulasso and conforms to similar installations already in operation by other ORD's. Hopefully in the near future this communication tool will be put to use in the field.

An equipment operator has been trained by the Radio Bobo personnel and has ample training to begin working in the field. This operator has also been trained in movie projector operation and maintenance through the USIS facilities in Ouagadougou. The cin bus is therefore ready for the projection, amplification, or recording of any ORD message. It is now the task of the ORD to designate and deceminate its prioritized messages in an organized fashion.

B.) Film shows: the availability of short documentary and feature films through the various national cultural centers and outside distributors allow the possibility of entertainment/instructional film showings on a mass scale. Films will be shown in selected towns in the ORD on a pilot basis during the Jan.-June period. Due to the "generous" grant of a surplus projector, loudspeaker, screen and generator by the USIS in Ouagadougou, the film program got off to an early start in February of this year. During this report period, films were shown on the eve of half the agricultural days and at various villages in the Pada secteur. Films were generally selected from the French Cultural Center in Ouagadougou and consisted of agricultural, health and cultural interest films which were directly translated into the Gourmanch  language. Films were previewed by the office and ORD bureau personnel for their appropriateness to the village audience and difficulties of translation and technical information discussed. Because of the thoroughness of these preview sessions and the voiced-over translation, the film program as an instructional/entertainment tool was well received, understood and appreciated by the village audiences. "Un succ s fou", commented the chief of the Bureau of Community Development. This "crazy success" should continue despite the continual breakdown of the surplus equipment and the logistical difficulties of obtaining the films; hopefully, with the arrival of new film equipment in the latter part of this year and by incorporating the film showings in an organized campaign in conjunction with the cin bus, the ORD can use film to its fullest potential.

C.) Planning of graphics materials and production studio. Plans for the graphic studio have been drawn and are awaiting estimates from local contractors to begin construction of materials and work space. Graphic materials will be purchased locally as shelf items. A graphic designer was selected by the ORD director from existing ORD personnel and began working on the final day of the report period, May 31, 1979.

D.) Archives: an archives of audio-visual materials will be established and begin to collect information from other audio-visual centers. Materials have been received from centers in the Ivory Coast, Niger, Senegal, and Upper Volta. These samples are now part of the permanent collection of the ORD and will be used as models for future projects. Requests made to other centers should continue on a systematic basis in order to build an even larger collection. In addition a small library of development materials has been set up in the audio-visual section and has been used quite extensively by the ORD personnel.

E.) Collection of ORD information. Technical papers have been collected from all the concerned bureaus of the ORD and are presently being used in the radio programming section. These materials will be used as technical information source for both the radio and future ORD audio-visual programs.

F.) Darkroom. A small temporary darkroom using the specialist personal equipment has been set up as a training facility for the photo portion of the audio visual section. Unfortunately, to date, the ORD director has not named a photographer for this section and no work can go forward until this is done. Plans for the permanent darkroom have been drawn and submitted to the ORD.

G.) Silk screen production. Silk screen equipment is not available in Upper Volta and materials have been ordered through Michigan State University and should arrive in early June. Silk screen paper has been purchased through a paper company in Bobo-Dioulasso. Work can begin as soon as all the materials have arrived.

H.) Training.

1) Personnel identification and selection has been the major difficulty of this report period. To date the personnel consists of one audio technician and a graphic designer. Both have had no former training in either of their fields and a major part of the specialist's time has been spent in equipment usage and maintenance. The lack of a qualified counterpart to take charge of the program presents the major stumbling block in the achievement of the specialist's goal to develop a viable program that will continue long after his contractual term. The specialist must not assume the responsibility of developing an audio-visual program on his own; only by working in conjunction with a responsible counterpart can any hope of a permanent audio-visual program be realized. The audio-visual specialist is a technician who is to serve in an assistance/advisory capacity and whose service is limited to a given period of time. Only 15 man months remain to the specialist's contract.

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2) In country training: the audio technician has participated in training sessions with the USIS Cinemateque in Ouagadougou in projector (16mm film) maintenance and repair. In addition, the audio technician participated in the installation and mechanics of the cinébus equipment in Bobo-Dioulasso. During the month of July 1979, both the audio technician and the graphic designer will participate in an extensive program with CESAO (Centre d'Etudes Economiques et Sociales de l'Afrique de l'Ouest) and work with the audio-visual section personnel in a "hands-on" technical training program.

IV. AGRICULTURAL CREDIT

The major areas of work in agricultural credit were in training and accounting.

A. Training of ORD Extension Agents

A Technical Manual on Agricultural Credit¹ was written for use in presenting a 2-day short course on agricultural credit in each of the sectors of the ORD to the sector chiefs and sub-sector chiefs and from them to the extension agents.

B. Agricultural Credit Accounts

A major program for handling the credit accounts and preparing individual borrower loan payment statements was prepared with CENATRIN (Centre National de Traitement de l'Information), the para-statal computer center in Ouagadougou.

V. PRE-COOPERATIVE VILLAGE GROUPS

The most important accomplishments with the pre-cooperative village groups were meetings of village group representatives and cereal banks.

A. Mass Meetings of Village Group Representatives

Mass meetings of village group representatives were held in the 25 sub-sectors of the ORD April 2 through May 8. Representatives of 275 of the total of 483 village groups (369 men's groups, 76 women's

1 "Fiche Technique Sur le Credit Rural" by Amidou Dahany and Thomas Stickley, Credit and Cooperatives Section, BDC, Eastern ORD, Fada N'Gourma, Upper Volta, March 1979.

groups and 38 4-C clubs) attended. These representatives were 1128 (15%) of the total of 7528 members. Details of the village group statistics and a summary of the results of these mass meetings appear in "The Report of Village Group Discussion Meetings Held April 2 - May 8, 1979"¹.

B. Cereal Banks

Growing out of last year's experiment with three village groups, cereal bank loans were given to 16 village groups during this reporting period. Besides these 16, thirty additional village groups started small cereal banks by their own means.

VI. FARM LEVEL ECONOMIC RESEARCH

A. Introduction

During the period extending from December 1, 1978 to May 31, 1979, the data collection phase of the ORD's 1978-79 farm survey² came to an end. Over these six months, the major activities completed by the MSU farm survey team, including Peter Matlon of MSU who served as consultant in February³, were the following:

1. supervision of data collection;
2. collection and checking of completed questionnaires;
3. design and implementation of special questionnaires necessary to fill in data gaps and provide cross-checks on key data; and
4. design of a plan for checking, organizing, and analyzing data in conjunction with CENATRIN, the national computer center at Ouagadougou.

Much progress was made in the farm survey in the past six months. The productivity and skill of the field staff markedly improved with increased experience. This permitted the introduction

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- 1 "Rapport des Journées d'Etude du 2 Avril au 8 Mai 1979" by Amidou Dahany and Thomas Stickley, Credit and Cooperatives Section, BDC, Eastern ORD, Fada N'Gourma, Upper Volta, May 1979.
 - 2 For a description of the objectives and methodology of the 1978-79 farm survey undertaken by the ORD's Bureau de l'Analyse Economique et de la Planification (BAEP) in cooperation with the MSU contract team, see the three previous MSU six months' reports.
 - 3 His report, "Consultant's Report: MSU Eastern ORD Project, Upper Volta", Feb. 27, 1979, by Peter J. Matlon, is available upon request from the Dept. of Agricultural Economics, Michigan State University, East Lansing, Michigan 48824.

of a more elaborate set of questionnaires which will provide a much richer data base than anticipated. In addition, the overall quality of survey data appears good and little data has been lost due to missing questionnaires of farmer attrition¹, which effectively amounts to only 1.2% of the 486² farm families originally sampled. Thus the end-of-survey sample size is 480 households which includes 355 randomly selected traditional farmers and 125 farmers purposively chosen to represent the most successful adopters of animal traction.

B. Data Collection

Data collection changed in nature in December when field work ended. Because the filling out of field labor questionnaires had previously required as much as half of total interview time, enumerator work loads greatly decreased. Due to enumerator fatigue, interview schedules were further reduced to once per three weeks for January and February to allow personnel to rest up for the special questionnaires introduced in March. This also allowed enumerators more time to help their supervisors with field measurement.

Because of delays in beginning field measurement, as mentioned in the previous six months' report, December and January were key months for completing the measurement of all fields of the 160 farm subsample from which labor data had been obtained. In February and March, fields of another 160 households were measured. With an average of 13 fields and subplots cultivated per sample household, field measurement has proven a more time consuming task than anticipated. It required the fulltime efforts of thirteen field supervisors and office staff, each of whom often worked with a locally hired laborer. The task was complicated by the distances between fields, the high degree of fragmentation and irregular form of fields, the presence of subplots of different crops requiring separate measurement, cases of confusion of field identification numbers, the extremely small size of childrens' fields and speciality crop plots, and the difficulty of distinguishing field boundaries between adjacent fields of the same crop. Office checking of field measurement data during March, April, and May continues to identify missing data, field identification confusion, and unacceptable closure error³ in excess of 5%. Much of

- 1 Of the farm households originally sampled, 3 refused to be questioned, 1 moved, and 4 dissolved due to the death of the head of household. Two of the reticent farmers were replaced in June 1978.
- 2 This does not include 12 Maticoali animal traction farmers mentioned in previous reports for whom only limited data was collected and only partial analysis will be performed.
- 3 This occurs when a field map, constructed from compass and distance measurements of the field perimeter, is not a closed polygon. Closure error is generally expressed as the closure distance divided by the length of the field perimeter.

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April and May was spent on time consuming revisits to farms to remeasure specific fields and clear up confusions. Because of time constraints due to the approaching planting season in May, it was decided to measure only the millet/sorghum fields of the remaining 160 households in April and May. These are easy to measure as there are usually only 3 or 4 of these fields per household. However, they account for approximately 85% of an average household's cultivated area and thus provide a good proxy measure for total acreage.

As of the end of May, approximately 4600 fields had been measured. The majority of all fields were measured during the dry season. A small number of fields were measured in May after new crops had been planted, which entails some loss of accuracy when field boundaries change and the farmer must approximate where last season's boundaries were located.

The major activity of the office supervisory staff in the last six months was the checking and collection of completed questionnaires. In January and February, all enumerators were visited in order to check, collect, and file all field labor questionnaires, which will provide approximately one third of all the survey data collected. Similar visits occurred in March and April to collect harvest and stock questionnaires. A final set of visits in May collected all remaining questionnaires. Because of the large number of questionnaires collected on these final visits, final checking and filing will occur in the office in June and July.

Because of the reduced interviewer schedules and the increasing experience of the field staff, supervisory activities were reduced during the last six months. On the average, the office supervisory staff made contact with each enumerator once each five weeks and with field supervisors once each eighteen days. Field supervisors contacted each enumerator an average of once each four days. Supervision has been slightly hampered by attrition of personnel. Of the fourteen original field supervisors, three have resigned (in October, December, and April, respectively) to take other jobs; one was returned to the ORD director for recycling because he effectively did no work since June 1978; one was confined to light office duties from September to January; and one has seriously neglected his duties during various periods totalling six months. In addition, Richard Swanson, an AID contract anthropologist assigned to the BAEP had no time available to help with the overall supervision of the farm survey from September 1978 until the end of his contract in February 1979 during which time he carried out a land tenure study¹ on the 354 Gourmantché households

1 The methodology, questionnaires, and results of this study are presented in "Gourmantché Agriculture, Part II:"

in the sample. There were few enumerator problems during the past six months except for the cases of two enumerators who failed to meet their deadlines for completing all questionnaires by May 25, which has delayed questionnaire checking.

Another major data collection activity was the design and introduction of 33 single interview questionnaires dealing with a wide variety of topics¹. The primary goal of these questionnaires was to fill in apparent data gaps and provide cross checking information on key data. All field staff were trained in the use of these special questionnaires during a training session held in Fada N'Gourma from March 12 to March 16. The training session and the performance of the new questionnaires in April and May was very successful because the field staff has become accustomed to the survey methodology which has greatly improved its ability to assimilate and utilize new material. In comparison with the 40 original questionnaires introduced in May 1978, these 33 new questionnaires were more complicated and elaborate, yet they required only one week's training rather than the five weeks required for the earlier ones. Similar efficiencies were evidenced among the office staff, as the March 1979 questionnaires required only five weeks for design, testing, mimeographing, and distributing, versus over four months for the May 1978 questionnaires.

C. Data Analysis

The ORD farm survey methodology is based around a core of forty continuous questionnaires filled out during weekly or monthly interviews of each sampled household over an annual cycle which began in May 1978. Realistically, the analysis of these questionnaires cannot begin until the end of the survey period because it would be difficult logistically to recuperate and analyse partially completed annual questionnaires. Single interview questionnaires could have been collected and analysed but these lend themselves to lower priority analysis than the annual data questionnaires. More importantly, the farm survey team had little time to commit to analysis over the past year in view of the other tasks required to insure successful completion of the data collection stage of the study.

The major portion of analysis of the 1978-79 survey data will occur in the next six months. To prepare for this, work has begun with the CENATRIN computer center in Ouagadougou. Direct keypunching of precoded data concerning field labor time and non-agricultural labor time began in March and May, respectively. These data represent approximately 60,000 computer cards and one third of our total keypunching needs. In addition, major progress was made

¹ Appendix C contains a list of all questionnaires used in the BAEP 1978-79 farm survey. Complete sets of all questionnaires are available upon request to MSU Project; s/c Ambassade Americaine; B.P. 35; Ouagadougou, Haute Volta.

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during the February visit of Peter Matlon, farm survey consultant and assistant professor of agricultural economics at MSU, towards designing a system of data organization and analysis. The major task of data processing and organization is the construction of eight major computer files, which are described in Appendix A, from approximately 81 base data files that will be directly keypunched from the precoded questionnaires. The majority of data analysis will be carried on the basis of these major computer files as they are far easier to manipulate than the disaggregated base files. The aggregation of the 81 base files to create the eight major files is a sizeable computer programming task which CENATRIN began in March. As of May 30, computer programs for the construction of two major files, the household member labor file and the household descriptive file, had been completed and await data for testing. CENATRIN, despite limited previous experience with processing large quantities of socio-economique data, has responded competently and enthusiastically to our computer service needs.

In addition, a program and schedule of data analysis was designed in February. Details of these can be found in the Matlon report. A list of preliminary analyses designed to meet the major needs of the ORD is presented in Appendix B.

D. Future Activities

In order to meet the ORD's needs for developing an ongoing program for collecting basic agricultural statistics, a limited farm survey of 168 farm families from 27 villages will be conducted in the next six months. Of these, 132 households and 21 villages are taken from the same sample used in the 1978-79 survey in order to allow comparison with last season's data. The aim is to collect basic data on acreage, yields, and crop sales on the basis of monthly interviews. This survey will employ 8 of our best enumerators, 8 field supervisors, and 5 office staff under the direction of Jean-Marie Ouedraogo, "Chef Adjoint" of the section of applied research of the BAEP. Administrative and supervisory responsibilities of MSU contract personnel will be reduced to 3 days per month in order to permit fulltime commitment to data analysis of the 1978-79 survey.

The following is a calendar of data analysis activities to be supervised by MSU contract personnel over the next 6 months period:

1. Computer programming for construction of 6 remaining major computer files (June to August).
 2. Organization, filing, and office editing of completed questionnaires (June and July).
 3. Key punching and verification of precoded questionnaires at CENATRIN (July and August).
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4. Coding and keypunching of 10 unrecoded questionnaires (August).
5. Computer editing of base data files (August and early September).
6. Preliminary descriptive analysis based on base files (August and September).
7. Aggregation of base data files into major data files and completion of the data tape (August and September).
8. Analysis of major data files as described in Appendix A and presentation of results (November and December).

This calendar assumes that we can meet the deadlines presented in Matlon's February report. As of May 30 we have been able to keep on schedule.

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APPENDIX A

Description of Major Farm Survey Data Files*

1. Household Member Labor File - age/sex of person, relationship to head, principle employment, place of residence during rainy and dry season, range of farm activities in which the person participates (seeding, weeding, plowing), if inactive why, education, age/sex composition of the household, work force composition of the household, land holdings of the household, hours of on-farm labor by month, hours working with animal traction by month, days in-active in each month by cause (sickness, etc.), average hours worked during previous day by month and activity.

2. Crop Production File - The following data will be aggregated at the field level: area, distance of field from concession, crop mix category, stands per hectare of each crop, quantity (in kg.) and (value of each crop harvested estimated by both yield plot and recall methods), intra-household tenure status of field, inter-household tenure status, soil type, seeding configuration, years since fallow, topographic features, rotation system practiced, coralling history of the field, hours of household labor by age/sex and month, hours of household labor by age/sex and operation, hours of non-household labor by age/sex and month, hours of non-household labor by age/sex and operation, hours of use of donkeys and oxen by month and operation, hectares plowed by animal traction, hectares weeded by animal traction, cash and in-kind cost of non-household labor, weighted mean date of planting of each crop, weighted mean date of first seeding, number of weedings, amount of seed planted for each crop, amount of chemically treated seed planted for each crop, amount of fertilizer applied by type, amount of insecticide applied by type.

The following data will be added to the file when aggregated to the household level: expenses purchasing and repairing hand tools, expenses purchasing fertilizer and insecticide by type, expenses purchasing and repairing animal traction equipment, purchases of other capital, purchases of seed, value of stocks of equipment by type, depreciation of capital stock by type, user cost of capital stocks by type, quantity and value of feed fed to traction animals, number and value of traction oxen and donkeys, hours tending traction animals by age/sex and month, where oxen kept by period, number of days animals sick by animal and month, occurrence of animal traction problems by month, number of animal traction animals owned by type, history of animal traction practices followed for each major operation and type of animal.

* Source, Peter Matlon, "Consultant's Report....."

Appendix A - (continued)

3. Household Descriptive File - Size and age/sex composition of membership, ethnic group, age and education of head, family structure, principle activity of members, number active and in-active in agriculture by reason, size of land holdings.

4. Credit File - Household demographic variables, income, for each loan given and received in cash or in-kind the following information: date of loan, category of borrower or lender, relationship of borrower to lender, value of loan, nature and amount of loan (if in-kind), expected term, expected value and/or quantity of repayment, gifts associated with the loan, date/nature/value of all subsequent repayments.

5. Crop Sales and Purchases - Demographic characteristics of household, size of land holdings, amount and value of harvests by crop, amount and value of crop sales by crop, amount and value of each crop purchased by use, amount of each crop given and received as gifts and reimbursements on loans, amount of each crop fed to animals, amount and value of each crop purchased for trading, amount and value of each crop sold in trading, stocks of major crops held in each of three periods, estimates of grain consumed during each of three periods.

6. Animal Traction File - Household demographic characteristics, number and value of animal traction oxen and donkeys, number of years each animal has been owned and performed the following work: plowing, weeding, transport with cart, number of each type of animal traction equipment owned and number of years actually used, quantity and type of feed given to each animal by month, cash expenses for each animal by type and month, where each animal was kept by period, number of days each animal was sick by month, the occurrence of major animal traction problems by animal and month, hours of work by each animal by activity and month, value of earnings generated by use of animals in off-farm work by animal by activity by month, hectares plowed by each animal, hectares weeded by each animal.

7. Income File - Household demographic characteristics, value of crops produced, value of crops sold, value of farm variable costs, expenditures on farm variable inputs, depreciation of tools and equipment by type, expenditures on purchases and repair of tools and equipment, user cost of tools and equipment by type, net farm income, cash income, cash receipts from livestock, cash expenditures on trading stocks in farm products, value of change in farm produce trading stocks, cash expenditures on transport of trading items, off-farm employment income in-kind and in cash, pensions, cash and in-kind expenditures on agricultural products for processing, value of cash and in-kind expenditures on other processing inputs, value of sales of processing output, expenditures and receipts of artisan

Appendix A - (continued)

equipment, value of gathered products and sales, cash and in-kind receipts from off-farm animal traction use, allotted variable costs in cash and in-kind for off-farm animal traction use, allotted depreciation for off-farm use of animal traction equipment, value of in-kind and cash gifts given and received, value of in-kind and cash interest paid and received.

8. Cash Flows File - Household demographic characteristics, value of all cash expenditures and receipts through purchases, sales, gifts and loans transactions by month.

APPENDIX B

LISTE PRELIMINAIRE DES ANALYSES DESCRIPTIVES
POUR L'ENQUETE AGRICOLE DE L'ORD DE L'EST*

Les données qui sont collectées dans le cadre de l'enquête agricole qui se déroule actuellement dans l'ORD de l'Est vont permettre d'avoir un large éventail d'analyse descriptive et évaluation.

La liste suivante résume les types d'information qu'on peut disposer pour décrire les systèmes d'exploitation, la structure et le comportement économique des ménages ruraux de l'ORD.

1. Caractéristiques socio-démographiques de ménages:
 - a. taille;
 - b. composition - classes d'âge et sexe, actifs agricoles, etc...
2. Modes d'utilisation du sol:
 - a. superficie cultivée;
 - b. tenure des terres;
 - c. types de sol;
 - d. superficie cultivée des principales cultures;
 - e. jachère et modes de rotation.
3. Capital:
 - a. inventaire des outils et équipements agricoles;
 - b. dépenses pour les outils et équipements agricoles;
 - c. inventaire des animaux.
4. Emploi du ménage:
 - a. niveau annuel et mensuel du temps de travail;
 - b. allocation du temps de travail entre activités agricoles et non-agricoles.
5. Systèmes de cultures et productivité agricole:
 - a. niveaux de production des principales cultures;
 - b. budget des coûts et revenus de chaque culture (voir annexe A)
 - c. analyse de l'utilisation de l'équipement de la traction animale.
6. Commercialisation des produits agricoles et des animaux:
 - a. vente de produits et d'animaux;
 - b. achats de produits et
 - c. stocks au niveau de l'exploitation des principales cultures.

* Source, Peter Matlon, "Consultant's Report....."

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Appendix B - (continued)

7. Participation dans les programmes de l'ORD:
 - a. niveau de connaissance des programmes de l'ORD et participation;
 - b. attitudes envers les programmes de l'ORD.
8. Crédit:
 - a. valeur, utilisation et coût du système informel de crédit;
 - b. compréhension des programmes de crédit de l'ORD;
 - c. coûts associés de participation dans le crédit de l'ORD.

Il faudrait noter que divers types de statistiques seront présentées dans chacune de ces classes générales d'information (moyennes, distribution de pourcentages, etc...) de façon à fournir un profil complet des ménages. Il serait également possible de découper l'échantillon en plusieurs groupes pour montrer les variations selon:
a) les secteurs; b) les zones agro-climatiques; c) les zones Gourmantchèes et Mossis; et d) les utilisateurs et non-utilisateurs de la traction animale.

Budget agricole typique pour chaque culture: par hectare.

A. Données techniques:

1. Rendement (kg).
2. Taux de semence (kg).
3. Utilisation d'engrais par type d'engrais:
 - a. nombre d'exploitants utilisateurs (X),
 - b. taux d'application (kg).
4. Traitement des semences:
 - a. nombre d'exploitants qui le font (X),
 - b. taux d'application.
5. Utilisation totale du travail (heures):
 - a. du ménage,
 - b. hors ménage (travail payé, invitation, etc...).
6. Salaire moyen du travail payé (CFA/heure).
7. Prix du produit (CFA/kg).

B. Coûts et revenus:

1. Valeur de la production (CFA).
2. Coûts variables (CFA):
 - a. semences,
 - b. engrais,
 - c. travail non-familial.
3. Marges brutes (CFA).
4. Dépréciation des outils et équipement (CFA).
5. Marge nette du travail familial, de la terre et du management (CFA).
6. Marge nette du travail familial, de la terre et du management par heure (CFA/heure).

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APPENDIX C

LISTE FINALE DES QUESTIONNAIRES
DE L'ENQUETE MICRO-ECONOMIQUE
1978-79

<u>No. de</u> <u>FICHE</u>	<u>TITRE</u>
1	Semences, fumures, et produits phytosanitaires utilisés
2	Récoltes des champs
3	Récoltes des carrés de rendement
4	Temps de travail perdu dû à des indispositions des membres du ménage
5	Achats et réparations des facteurs de production
6	Ventes des produits cueillis par le ménage
7	Achats des semences et produits agricoles
8	Ventes des produits agricoles produits par le ménage
9	Commerce des produits agricoles
10	Achats d'animaux
11	Ventes d'animaux et produits animaux
12	Dépenses pour l'élevage
13	Alimentation des animaux
14	Gardiénage et maladies des animaux de trait
15	Coûts et revenus provenant d'occupations non-agricoles
16	Prêts en espèces
17	Prêts en nature
18	Remboursements reçus
19	Emprunts en espèces
20	Emprunts en nature
21	Remboursements effectués
22	Cadeaux donnés
23	Cadeaux reçus
24	Paiements reçus pour les ventes à crédit
25	Paiements effectués pour les achats à crédit
26	Transformation des produits agricoles: achats et ventes
27	Précisions sur les dépenses pour les animaux de trait
40	Temps de travail de chaque membre du ménage sur le champ: _____
41	Temps de travail au champ par des personnes extérieures aux ménages
42	Traction animale: utilisation des attelages dans les champs
43	Traction animale: transport par charrette
44	Temps de travail des membres du ménage dans les champs d'autrui
45	Temps de travail des membres du ménage dans toutes les activités d'hier
46	Temps du travail en élevage de chaque membre du ménage

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Appendix C - (continued)

<u>No. de FICHE</u>	<u>TITRE</u>
50	Recensement initial des membres du ménage
51	Recensement initial des champs du ménage
52	Historique des champs
53	Inventaire du cheptel mort et matériel agricole
54	Valeur du cheptel mort et du matériel agricole
55	Inventaire du cheptel vif
56	Changement démographique dans les ménages
57	Stockage des récoltes
58	Mesurage des superficies des champs, cultures présentes, et carrés de densité.
59	Recensement des vendeurs et services aux marchés locaux
60	Recensement des occupations non agricoles
61	Récapitulatif des champs
62	Changement dans la taille des troupeaux (achats et ventes exclus) et les impacts des maladies
63A	Situation des prêts en fin d'année
63B	Situation des emprunts en fin d'année
64	Historique des animaux de trait
65	Récapitulatif des infirmités
66	Précision sur la productivité des différentes catégories de travailleurs
67	Prix aux marchés locaux
68	Revenus reçus au cours de l'année écoulée
69	Problèmes spécifiques des cultures
70	Stock de matériel et équipement utilisés dans les activités non agricoles
71	Ration alimentaire du ménage
72	Historique de l'utilisation de la traction animale
73	Achats de biens de consommation
74	Coûts des invitations de cultures
75	Institutions traditionnelles d'épargne et attitudes envers l'épargne et le crédit
76	Système formel de crédit et coûts implicites
77	Contact avec l'ORD
80	Listes des ménages recensés en 1975
81	Superficies des champs
82	Kilométrage effectué pendant les heures de mission
83	Valeur de cheptel vif
85	Codes des secteurs et villages
86	Liste des questionnaires
87	Prix trimestriels des produits agricoles
88	Prix de vente de sorgho/mil
89	Evaluation de la qualité des données par les enquêteurs
100	Tirage de l'échantillon
102	Renseignement sur les animaux de trait
104	Poids des unités de mesure utilisées sur les fiches 02 et 13

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Appendix C - (continued)

<u>No. de</u> <u>FICHE</u>	<u>TITRE</u>
105	Inventaire de l'équipement traction animale
106	Mesurage des animaux de trait
107	Poids des louches et Calebasses
108	Comparaison de la campagne 1978 aux campagnes précédentes
109	Renseignements supplémentaires sur les champs
110	Parcage aux champs
111	Dégats aux champs
112	Rapport mensuel
113	Questionnaire supplémentaire sur la traction animale
114	Vérification des données des récoltes, des ventes, et des stocks
115	Système formel de crédit et coûts implicites
116	Essais du Phosphate Naturel et Labour attelé
117	Pertes en stockage
118	Evaluation du coût d'entretien des engins
158	Coordonnées rectilignes
161	Récapitulatif des champs pour utilisation avec fiche 58
203	Liste des Cultures Présentes aux Champs en 1978
204	Fiche de dépouillement (données au niveau des ménages)
205	Fiche de dépouillement (données au niveau des villages).
206	Fiche de dépouillement (données au niveau des cantons)