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CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) - PART I

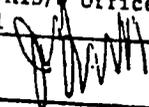
1. PROJECT TITLE  TOGO ANIMAL TRACTION A.I.P.	2. PROJECT NUMBER 698-0410.18	3. MISSION/AID/W OFFICE OAR/TOGO 211
	4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) <u>693-E-81-4</u>	

5. KEY PROJECT IMPLEMENTATION DATES	6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY _____ B. Final Obligation Expected FY _____ C. Final Input Delivery FY 82 _____	A. Total \$ <u>625</u> B. U.S. \$ <u>500</u>	From (month/yr.) <u>APRIL 78</u> To (month/yr.) <u>JUNE 81</u> Date of Evaluation Review <u>JULY 81</u>

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE	C. DATE ACTION TO BE COMPLETED
1. Extend PACD to June 30, 1982	OAR/Lome and Project Officer REDSO/WA	Aug. 81
2. Send PID for follow-on activity to AID/W	OAR/Lome and REDSO/WA Director	Aug 81
3. Provide short-term TA to assist in resolution of credit policies and practices	OAR/Lome and REDSO/WA Project Officer	Jan. 82
4. Institute a systematized program of recording and reporting on-farm practices and results.	Project Management Unit, DRDR and PCVs	Jan. 82
5. Improve collaboration in project implementation with other agencies and GOT, particularly with regard to national animal traction policies.	Project Management Unit and OAR/Lome	Nov. 82

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS	10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT
___ Project Paper                    ___ Implementation Plan ___ Financial Plan                ___ PIO/T                    ___ Other ___ Logical Framework           ___ PIO/C ___ Project Agreement           ___ PIO/F	A. Continue Project with- <u>X</u> out change B. ___ Change Project Design and/or ___ Change Implementation C. ___ Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)	12. Mission/AID/W Office Director Approval
Vincent Barrett, Animal Science Consultant Sidney Bliss, Assistant Program Officer, USAID/Niger John Dorman, REDSO/WA Ag. Economist Steve Grant, REDSO/WA, Human Resource Development Ronald Schwarz, Sociologist Consultant Frances Stier, REDSO/WA, Anthropologist	Signature  Typed Name John A. Lundgren Date 17 AUG 81

### 13. SUMMARY

The AID-funded animal traction project in the Kara region of North-Central Togo has made remarkable progress to date towards accomplishing those goals which were set out in project design. In spite of almost a year's delay in AID project funding approval, that momentum toward the implementation of a sound animal traction program which was generated prior to the AIP, has been sustained by those parties responsible for project management and field-level execution. ~~With limited means at its disposal and oftentimes caught in the~~ midst of a Togolese government decision making process over which the project has little direct influence, the project has nevertheless been able to make a salutary beginning in demonstrating the viability of an animal traction program as a practical instrument for expanding agriculture production on small and medium-sized land holdings in northern Togo. The project has been particularly effective in support of the Togolese government nascent animal traction policy and evolving implementation structure. As outlined in the Project Paper, the project has sought to work within the existing rural development services, rather than creating parallel services which may tend instead to serve short-range objectives. Specifically, the project has made considerable, albeit measured, and deliberate contributions to: a) the physical infrastructure required for the purchase, pre-training and distribution to farmers of draft animals through a network of project-trained extension agents; b) the organization of a support system for supplying draft animals on a large scale to area farmers according to terms and conditions that are becoming more clearly defined and adapted to the needs of all parties; c) the beginnings of the development of concomitant agriculture systems which are related to animal traction and are adjusted to particular farming practices; d) the adoption of a series of policies which favor a new agricultural technology in a potentially growth-oriented development sector.

### 14. EVALUATION METHODOLOGY

The present AT project was designed to provide the Togolese rural development services with the resources and stimuli to undertake an active and coordinating role in the establishment of a system which could provide access to animal traction technology for a limited number of the region's farmers. While AT activities in the area have existed sporadically (in time and place) since the mid-sixties, the efforts were neither complete nor sustained and therefore made for inconclusive determinations regarding the potential contribution of AT to rural development. The purpose of this activity has been to test an appropriate technology on a significant scale in order to permit an evaluation to take place which could make timely recommendations for the adoption of AT activities on a larger scale.

No specific evaluation plan was included in the project design. Rather, a series of outputs is described in the project documentation which includes most of the elements of a successful AT program. An assessment of the measure of attainment of these outputs should be able to provide a reasonable standard by which this activity can be judged to have succeeded in implementing the AT program. The evaluation team had the occasion to review the project outputs at a point approximately 2½ years after implementation began and a full year before the recommended revised project activity completion date. This is the only evaluation of this activity which will occur in the life of this project, although an earlier evaluation was called for in the project documentation. Limited human resources at OAR/Togo prevented anything more than quarterly status reports, prepared irregularly by the project contract coordinator or the Project Director, which not only signal progress, but also complications in project implementation.

The present evaluation was conceived as part of a larger effort to prepare preliminary documentation and meet project identification requirements prior to the eventual submission by OAR/Togo of an important AID-funded program of long-term support for the Togolese government initiatives in providing farmers with access to AT technology. A multi-disciplinary team was recruited and fielded for a period of three weeks to perform an evaluation within the context of a PID design. This PES is consequently composed in a large part of observations and recommendations that the team made in order to improve the present project, with a view toward honing a model that could be carried into the expanded, extension phase of the AT program.

In the course of its assignment, the evaluation team had access to project files and reports, as well as to a growing body of AT documentation, but was particularly aided in understanding the evolution of the various activities within the project by discussions with those intimately related to project implementation. The seven Peace Corps volunteers connected to the project must be cited for their remarkable interest and involvement in many of the most difficult and essential elements of the project. Both the Togolese Project Director and the Director of the AT center in Agbassa made invaluable contributions to the team's appreciation of project operations within the context of Togolese government policies and procedures. A rapid series of meetings and interviews were effected at the functional level of government ministries, technical services, collaborating donor representatives and implementing agents and conversations were held with individual field extension agents and both recipient and non-recipient farmers.

The broad range of sub-activities and the large expanse of territory covered under the project, prevented a more thorough examination. The lack of a working system of follow-up monitoring procedures, including an accurate method of recording, to date, all but eliminated the opportunity to compare recent economic and social developments with the hypothetical optimum farming systems devised in the Project Paper.

## 15. EXTERNAL FACTORS

### A. GOT Policies

At the time of the project's inception, in 1978, the GOT was in the midst of the Third Development Plan, and while directing some attention toward increasing small-scale agricultural production, the main emphasis was decidedly on major crop production gains from large scale mechanized agriculture. A national commitment was made to the capitalization of the economy, and in particular, the agricultural economy. This policy was evidenced in motorized land preparation which, until 1978, received an 85% government subsidy. When production (and tractor utilization) lagged considerably behind expectation, subsidies were gradually reduced (50% in 1978, and less in succeeding years to the point where the rental fee today is about 18,000 CFA francs per hectare), and government development offices began to look for alternative ways to expand production and productivity.

At the same time that AID began funding the present AT project, other major donors also made animal traction an integral component in their design of rural agricultural projects. Beginning in slow, measured steps, the donor community followed discreet indications from the GOT, that given adequate resource and a tried and proven farming system which includes AT, the government was prepared to make a serious and concerted commitment to the extension of animal traction on a national scale. Furthermore, the apparently successful implementation of AT systems in neighboring countries has provided agricultural technicians with increasingly believable evidence as to the appropriateness of AT technology for small-scale farming in Togo.

The avowed aim of the AID AT project was to demonstrate a workable AT farming system to both farmers and to responsible officials within the GOT so that a shift would be stimulated toward the AT option. Without taking any credit away from FED, UNDP and PVO activities which had modest beginnings at the same time, the AID AT project can claim much of the credit in providing the impetus towards a shift in the orientation and the level of investments in agriculture technology. The Fifth National Party Congress, held in 1980, assigned a firm national commitment to animal traction activities. This decision is reinforced in the Fourth Plan for Economic and Social Development, 1981 - 1985. While AID (and other donor) resources may continue to provide the basework, the technical support and the direction of the present-day working out of this decision, the GOT has exhibited at the onset a remarkable, tangible, and financial expression, of physical and moral support for AT activities, in collaboration with the interested donor community. While the costs of all of the GOT's investments and contributions to the AT project would be literally impossible to determine with any ease, the evaluation team found the GOT participation to the project to be more than satisfactory. Where project obligation documentation called for a \$125,000 equivalent share in project expenses, this figure will in fact have been easily surpassed by the end of the project.

The GOT is bolstering its policy support of AT by instigating a series of changes within the structure of the systems upon which a successful, national AT program depends. In this regard, a Committee on Animal Traction (COCA) has been established, comprising representatives of the Ministries of Rural Development and Plan, the Director of the present-day government-designated oxen and equipment buyer and distributor in the southern regions (PRODEBU), and the

agriculture advisor to the FED - the donor organization with the largest stake to date in AT activities. This committee is to make proposals to the government for the creation of a national structure which will be given the responsibility of implementing or coordinating all the sub-activities involved in AT. In spite of the recent surge in AT projects, there are no defined policies or practices on the purchase and distribution of AT units; there is no unified system of credit to be accorded for the acquisition of AT units; responsibilities in extension agent and farmer training, animal health, and in the manufacture/supply of spare parts, all remain to be clarified. The AID project personnel's views on these issues are actively solicited by this committee. Proposals for the creation of a new structure are currently under review. Decisions are anticipated in November 1981, coincident with the planned Project Paper team's effort in designing an extension phase to this project.

### B. Regional Organization

During the course of project evaluation, the GOT reorganized the national administrative and economic-development districts. Although not all the details of its implementation are known, this reorganization will impact on the project in at least two ways.

First, the administrative districts of Assoli and Bassar are to be included for the first time within the Kara economic region. The Bassar district is situated just to the west of the Agbassa AT center, on the other bank of the Kara River. Once a bridge is constructed (and one is planned under the FED contribution), access will be made much easier to the relatively sparsely settled but fertile farmlands of Bassar. The center is already planning to expand its zone of action to include some initial activities in Kabou, within the Bassar district. The Bassar district is the site of a major project initiative in rural development scheduled to be funded in part by the World Bank. The project is linked with the GOT state enterprise for cotton, SOTOCO, and is planning to use AT systems to increase cash and food crops in the district.

Secondly, it appears the GOT is planning to shift a major portion of the decision-making process in matters that most directly concern an economic region, to the responsibility of that region. Directors of the Kara and Savannah regions will soon be named who should have the authority to cut across ministerial and service lines and coordinate development actions, particularly those sponsored by donors, towards more coherent and unified objectives. This decision could play a major role in eliminating many of the ambiguities that exist at present in the multiplicity of systems of credit, animal and equipment purchase, training programs and animal health services - to only cite those activities which bear directly on animal traction.

### C. Migration: Voluntary and Involuntary

Animal traction continues to be the basic unit of association within most of the rural development projects in the Kara and Savannah regions. The major FED initiative with which the AID AT project has been associated to date, depends on the adaption of the AT system by farm families who have migrated (recruited, not spontaneously) from the Kabye mountains to the comparatively unpopulated

plains near Agbassa. These "privileged" farm families have played an important role as innovators (albeit with considerable project support) in AT. Resident farm families in the area, and those living on the edge of denser farming settlements, have a model now to expand their land under cultivation with the assistance of AT. The AID-funded project has sought to work with these "pioneer" farmers who have the greatest opportunity for expanding their agricultural economic unit of production.

Involuntary migration is also occurring within the project zone. The forced displacement and resettlement of farm families in the Kante district, in order to accommodate the creation of a national wildlife reserve, has eliminated a large tract of average quality farm land from cultivation and had the effect of discouraging the displaced people from wanting to deal with government sponsored "development" programs. The same issue is going to arise in limited areas of the Savannah region if the project expands to the north. The exact northern limits of the park are not yet clearly defined and confusion exists in the farmers' minds.

Finally, the stagnating economic situation in the coffee and cocoa areas of southern Togo and Ghana means that fewer Kabye and Losso farmers are migrating in that direction, either seasonally or permanently. Consequently, this former major source of outside income is reduced, and farm families are obliged to find replacement sources. This action could favor the extension of AT, but will also probably stimulate a rural exodus in the direction of cities in order to find industrial and service sector employment. Given the current malaise in Togo's "modern industrial" sector, this could create problems in urban unemployment. It is not inconceivable that the government will try and use AT as a major attraction to return farmers to the countryside.

## 16. INPUTS

At least three areas of project inputs were hampered at some stage in project implementation and consequently impacted on project outputs and the achievement of project purpose.

### A. Credit

Only an initial effort was made to establish an accessible credit system for animals and equipment. The system suggested in the PP was proposed once to the Kara region National Agricultural Credit Organization (CNCA). Its terms differ sufficiently from the terms normally used by the CNCA for agricultural lending that the matter was reportedly referred to CNCA headquarters in Lome. There, the issue became lost in the current state of affairs. Today, no workable CNCA credit policy exists for animal traction. This situation, hopefully to be resolved this year, is bound to have repercussions in farmer acceptance of AT, in respect for repayment schedules, and in the willingness of CNCA to involve itself in an active role in the dissemination of credit information, adjusting credit terms to meet farmer needs, and in making allowances for late payments.

Unfortunately, the AID-funded AT project has not been able to benefit from any continuing expertise either in helping to define a suitable credit system, or in having any real influence in the decision-making process. Consequently, unless AID can make some direct, punctual inputs in the succeeding months, real participation in the formulation of a credit system may be given up by default to the FED, IBRD and the GOT (CNCA and COCA)

### B. Training

The project has not been able to mount the sort and frequency of training sessions that the PP envisioned would be necessary to convey interest, knowledge, skills and proficiency in the range of AT methods. This was due in part to the burden of organizing and managing the more physical aspects of project implementation (construction of the Agbassa center; purchase, handling and distribution of draft animals and equipment) which prevented the training component from receiving its due attention. Part of the reason is also the typically low priority that training (and retraining) activities have been accorded through the overworked and under-equipped DRDR. Now that most of the principal construction has been completed and a link has been set up between DRDR and Agbassa training operations, this input should improve its performance in the third year of the project.

### C. Extension Advice

The Peace Corps volunteers assigned to the project were trained in the basic methods of animal traction techniques. Their background and training and terms of service permitted them to train encadreurs and farmers principally in draft animal breaking and AT field operations. Some volunteers acquired special skills in the course of training in animal health, care and feeding. Almost no effort was made to train volunteers in the typical agricultural operations that occur on a small farm in northern Togo. Consequently, when the volunteer was asked to include farming systems extension work at the level

of individual farms among his responsibilities, he found himself incapable of fulfilling his job assignment.

Extension advice in farm systems and management is a key and integral part of the introduction of AT. The AT system cannot be successfully introduced without accompanying the training with advice on alterations that will have to be made to farm systems and management. Efforts are being made to rectify this situation during the next volunteer training session (scheduled for June-August 1982). ~~In the meantime, volunteers have asked that they be relieved of~~ their responsibilities in an area about which they have no specialty, and (the two are related) to be likewise relieved of the necessity of entering into direct contact with AT farmers. Volunteer links with encadreurs should be strengthened so that the latter successfully acquire all of the AT skills that volunteers have to offer. The AID project should support any efforts on the part of FED and DRDR to continue to upgrade the skills of encadreurs in farm systems. Subsequently, encadreurs will have the primary role in dealing with farmers; volunteers should develop a strong supervisory role.

Failure to organize and implement in a timely and meaningful fashion the three inputs described above: an accessible credit system, a training program in AT methods and the development and propagation of practical advice on related cropping systems, are bound to impact adversely at the very outset of an AT program on the chances that a user-farmer will in fact "...realize concomitant increases in food and cash crop production per farm and increased incomes ..." (second project purpose).

The AT project has not collected data which would indicate that gains in crop yields and production and increases in farmer income can be traced to the implementation of credit, training and proper farm extension information. However, after discussions with expatriate and national technicians assigned to this project (and to other area AT projects), the evaluation team believes that if these inputs are improved and monitored, subsequent quantitative evaluations, of the sort which are recommended elsewhere in this report, will show important linkages. This leads us to place a particular emphasis on the development of these three inputs throughout the remainder of the immediate project and into any follow-on stages.

On a purely mechanical level, activity inputs were delayed in the project approval process to the point where more than a year was "lost" at the outset. Conceived as an AID Accelerated Impact Program, with a two-year life-of-project, the project was designed in April 1978 with planned activities closely related to the change of seasons and the agricultural calendar of the following two years. The implementation schedule called for a November 1978 approval date with a Project Agreement due for signing by March 1979. In fact, the Project Paper modified the implementation calendar in order to accommodate a delayed approval process. A project which begins in mid-year and requires substantial start-up inputs on the part of the host government, is likely to suffer from a delay in the assignment of government personnel and the availability of programmed materials. April 2, 1979 was not an ideal date to begin project implementation, but Peace Corps volunteers had been in the field for over six months with almost nothing to do, and AID was anxious to "plunge in" at some point. Without a clearly defined project management unit, with almost no logistical support and without the benefit of the infrastructure of a completed AT center, it is very commendable that so much AT activity was nevertheless generated in the first twelve months.

In the future, AID inputs within AT activities in Togo should be careful to respect principles of timing:

- 1) Togolese government budgetary, personnel and material inputs should be given adequate lead time for preparation. If a major government effort is required to collaborate in executing an agriculture campaign in the Spring, then steps must be taken the preceding Summer and Fall to insert the program in the GOT budget and planning cycle.
- 2) Project inputs must be phased logically and practically. ~~The reason given by project staff for the tag in an active training program at the AT center~~ was the extraordinary emphasis placed on construction activities during the first year of project operations. Admitting the need to establish a permanent physical base, AT projects may discover that greater and more immediate gains in "farmer acceptability" are related more to the establishment of effective encadreur training programs and on-farm demonstrations than to a preoccupation of time and effort with construction.
- 3) The timely integration of all inputs is ultimately indispensable to the success of an AT project. While short-term gains in AT acceptability may be very satisfying to project managers and participants, unless each of the inputs is effectively developed, anomalies are certain to arise which can jeopardize the whole project. In several instances, it appears that draft animals and AT equipment have been released to farmers without making them aware of any eventual costs involved or of any firm repayment schedule. If the credit "package" has not been first developed, explained and agreed upon, then the distribution of AT units may have disastrous consequences. The other project inputs are similarly linked and require careful coordination of timing, emphasis and allocation of resources.
- 4) If Peace Corps volunteers are going to be counted upon to carry a major proportion of project inputs, then the activity implementation calendar should make allowances for their training, settling-in and familiarization with the socio-economic setting. A disoriented or a poorly prepared technician, be he expatriate or national, is not an agent for change within a community. AID, PC and the GOT must work harder to prepare volunteers with appropriate technical skills and with the means (material and psychological) to communicate the opportunities offered by the project in a manner that can be performed and understood by the encadreur and by the farmer.

## 17. OUTPUTS

Project outputs are described and quantified in the Project Paper over the life of the project. Although the project was originally programmed to run just two years; it has been extended to run a third agricultural season. The consideration of outputs below will measure actual progress to the date of the evaluation - about one calendar year ahead of the PACD.

A. ~~"Sixty to eighty teams of oxen will be trained for animal traction on small farms."~~

In spite of a late start, 16 pair were trained in 1979, 30 pair were trained in the 1980 season and approximately 60 pair are either already trained or will have been trained during the course (or after) the 1981 cropping season. The total of 106 pair, well in excess of projections, is limited not by the capacity of the project unit to purchase, break, train and place oxen teams. Instead, the AT equipment supply source in Upper Volta, could not furnish more AT equipment units. A limited number of units produced is competed for by buyers in Upper Volta, Ghana and Benin.

B. "A minimum of 60 - 80 farmers will be trained in animal traction techniques of animal husbandry."

The techniques to "break and train" a pair of oxen, employed by the personnel involved on the project, call for four farmers for each pair. It is safe to assume that different farmers were not always involved (neighbors have a way of helping each other). Nor has every farmer who has gone through the training experience become a recipient of an oxen team. Occasionally encadreurs, instructors or laborers at the Agbassa center, and even volunteers make up the foursome required to properly handle untrained oxen. Complete names and addresses of all those who participated do not exist, but it is safe to estimate that at least 200 farmers may have been involved in the training process.

Training in animal husbandry is another thing. If, by animal husbandry we mean animal health in a narrow sense - vaccinations and occasional treatments for parasites, the project can be said to have done much to establish and maintain healthy oxen. However, credit for this output must be attributed more to the Animal Health Service, not to farmer training. Health cards for each draft animal are generally kept up-to-date and on-file (accessible to the evaluation team) at the district Animal Health Service. Of the few farmers asked about cards for their oxen, each was able to produce some official-looking record of the animals' veterinary health care. It is not expected that individual or (even groups of) farmers will be able to handle animal health care problems for several years, although efforts should be made to train farmers how to recognize and treat symptomatically simple health disorders.

There has been some instruction to AT-user farmers given under the project on such matters as animal feeding, particularly dry season feed, and some trials have been done on making ensilage, both at the center and on a farm. There has also been instruction on how hard to make the animals work and at what time of day.

One of the prerequisites for qualifying for purchase of oxen, suggested in the Project Paper, is the farmer's construction of a primitive stable. This

is designed to shelter the animals, keep them out of the household and the fields, and to centralize the collection of manure. This stable building has not been respected in every instance, or if built, the oxen are sometimes allowed to stand in a field, tied to a stake instead.

C. "The physical plant of the animal traction center at Agbassa will be expanded to permit to to serve as the sole agent of purchase and distribution of oxen for all animal traction training and support services."

The AT center at Agbassa has been greatly built up under the present project. A large stable (room for up to thirty head), a reinforced corral, a veterinary care building, a carpenter-blacksmith workshop, and a dormitory/classroom building (with outlying facilities) have all been built. The quality of construction work is excellent. Only some exterior work remains, such as painting. Project funds also helped to repair existing facilities: a stable and corral, a closed-in warehouse, and three residences (for the center director, a PC volunteer responsible for the construction program, and the head instructor in the AT training program).

The water facilities for human and animal consumption at the center are being improved. The project has contracted with a private well driller (simple zuger device) to dig a 30 meter deep small-bore well. According to project officials, FED has promised to drill mechanically (with power tools) a 50 meter-deep well with a guaranteed output of at least 1,000 liters per hour. The FED is likewise to supply the pump. Water supplies should then be adequate to handle the increasing demands of animals and personnel at the center.

The center has 250 hectares of unimproved and unoccupied land at its disposal. According to our best sources, this land will remain the property of the center. Rumors that the area may be reduced to 100 hectares appear to be ill-founded. The evaluation team sought and got a firm verbal commitment to the retention of a 250 hectare area from GOT officials. The project is planning in its third year to begin to try and establish formal boundaries for the center. Plans call for "live-fencing" to mark the edge. Given the pressure for expansion and settlement in the area, the center's land should be surveyed and recorded, with concrete markers at strategic points. There is no need foreseen for any barbed-wire or sheep-wire fencing of any sort.

Whether all of the above components fully constitute an effective base from which all draft animal purchases, pre-training and distribution for the Kara region can take place is the challenge of this project. The center now is able to handle animal traction operations which meet an increasing percentage of the current demands of development projects for oxen teams in the Kara region. The center is considered the primary handler of oxen for the adjacent FED resettlement project, for the AID/Entente funded "Projet Vivrier", and for the farmers who fall outside of the various "project zones" in the Kara region. Two major area rural development schemes (Projet Nord, funded by UNDP through the Ministry of Plan, and the SOTOCO operations to be funded in part by the World Bank) either expect to rely on their own resources to perform the necessary acquisition, transportation, and pre-training of draft animals, or are as yet undecided as to the future possibility of working at least some of their yearly orders through the center.

The center has demonstrated itself capable of processing over 150 pair of oxen per year through its system. Current projections of demands up to 2,000 pair per year by the area projects cannot now be accommodated by the center, given its present size, personnel and logistics capabilities. Project personnel believe that existing (and planned) facilities will allow the center to handle up to 500 pair per year. More than that means additional animal grouping centers may have to be built elsewhere, handling systems streamlined and animal training may have to be done more at regional subsites (~~Centres d'Appui Technique~~) and on the farms of AT-users.

The center has not fulfilled Project Paper expectations with regard to serving as the primary regional center for training and AT support services. While generally satisfying the training needs of the limited number of farmers who are scattered across the Kara region, outside of those "project zones" covered by either the FED, UNDP or SOTOCO, the center's training facilities (limited until recently) and instructors have not been called upon, with one exception, to assist in training activities of any nature, by the other projects. The one exception was when Projet Vivrier (partially AID funded through Entente Fund) requested that six encadreurs, assigned to that project by the Kara region DRDR, pass a three-week AT training program at the Agbassa center. Generally the other major projects in the region feel that AT can be best performed on farmland closer to the center of their own principal operations and nearer to the farmers' own fields.

None of the other projects have constructed specific training facilities such as exist at the center (dormitory, classrooms, eating area and related conveniences). It is very possible now, that with an infrastructure in place, experienced and qualified instructors on the center staff and a well-developed curriculum of training worked out for encadreurs, oxen trainers, veterinary agents and farmers (nothing has been done yet to devise a training course for blacksmiths), there will be more projects in the Kara region which will request the center to conduct training programs for personnel involved in that project. The center will soon be able to accommodate easily up to twenty trainees (of whatever particular discipline) at one time. A unified training structure in AT at the Agbassa center will contribute greatly to the harmonization of AT activities throughout the Kara region.

Support services are at the core of maintaining a successful AT program. They need not be elaborate and the responsibility for such should almost certainly be shifted to the farmers as soon as the requisite demand, skills and materials are acquired, and reliable supply networks are established. The center at Agbassa is still in a growing stage and the AT program is too young to suppose either that the center has been able to set up and maintain reliable support systems, or that the AT-user farmers have begun to take upon themselves the initiative and investment of foreseeing and remedying the various problem areas that arise in the course of farming with animal traction.

Support services can include: veterinary care, both at the center and in the field; metal work to repair broken carts and manufacture (if possible) or simply replace worn-out plow parts; credit for the purchase of additional AT implements; the acquisition of a replacement draft animal. All of these services

exist in a very beginning fashion in the Kara region, and as of yet, the center cannot guarantee an ability to supply any of them on a regular basis. Steps are being taken, however, to address each of these issues. The center can expect to play an increasingly important role in defining and in making up the AT support systems as the Togolese national AT policy is announced and the service attributions are designated and assigned to the principal partners. Meanwhile, the center should seek to involve itself both with on-going systems (of veterinary care, of implement repair and manufacturing, of breeding trials, etc.), and with new ideas in all of the above areas of specialty. The project staff is aware of, and the evaluation team took time to encourage the project to investigate, innovative, yet appropriate, ways to bring the AT system of farming more within the individual (and group of) farmer's control. One of the first steps may be a greater distribution of services on a more local level. The reinforcement of sub-sites to deal with first-echelon AT problems, might be a move in that direction. An alternative (competing) system of credit, is another; local depots of veterinary supplies is feasible already in some areas; greater familiarity of some farmers with livestock can lead to raising replacement stock.

D. "The animal traction center will conduct a minimum of two retraining programs of two weeks duration of approximately 140 ORPV extension agents in the four district economic zone of La Kara."

The only extension agents (encadreurs) who have been trained at the center are six from Projet Vivrier and five others who serve as counterparts to the five Peace Corps volunteers assigned to the project as field agents. To date, the center has been confronted with the limitations of space and a building program that pre-occupied center personnel for a longer period of time than was originally planned. Trainees have been housed in rude adobe structures while awaiting the completion (August '81) of the dormitory.

The Kara region DRDR (sucessor to the ORPV) has about 140 agriculture extension agents (more after the recent administrative reorganization placed the Bassar and Assoli districts within its boundaries). There is still some question on the part of DRDR as to whether all these agents should undergo AT training at the center. Not all agents are located in areas where AT farming activities can take place, due primarily to unavailability or unsuitability of land. DRDR has the responsibility for carrying out many sorts of agricultural operations throughout the course of the year (seed and fertilizer sales, tractor plowing, commercialization of cereals and tubers, and a long series of agriculture statistics). To date, DRDR has considered the AT program as an area of specialization and only those agents actually involved in AT needed to receive a systematic instruction at the Agbassa center. This division of responsibilities amongst DRDR encadreurs may change in line with GOT's new national emphasis on AT and following the completion of satisfactory facilities at Agbassa.

Projects in the area sponsored by FED, UNDP and SOTOCO have all recruited their own agents from outside of the DRDR system (Projet Vivrier has some of both). At least the FED resettlement project holds every-other week (Wednesday afternoon) classes for the extension agents engaged by that project. Courses are given by the project trainer, and cover a variety of subjects, not necessarily limited to AT, albeit related to the farming system that is needed to support an AT program. As the center develops its training program, there seems to be an opportunity for collaboration and exchange (of facilities, information and methodologies) between

organizations participating in AT activities. The evaluation team identified what appeared to be a genuine disposition on the part of personnel of the various projects toward working together in training.

To date, training at the center has been performed at the charge of the project. The center should determine the costs for the various training programs and then send invoices for actual expenses to the projects which send trainees. This will have the effect of putting the training programs on a self-sustaining basis and permit the upkeep of facilities. ~~There should be no lack of classroom or field supplies.~~ This policy may impact adversely on DRDR which may consider the center as part of its own operations. Some middle-ground may have to be reached, but DRDR should be encouraged to budget regular training at the center for its encadreurs.

Finally, the evaluation team heard the usual litany of complaints about the general ineffectiveness of encadreurs. Most agriculture extension projects in West Africa (including this one) depend to some large extent on the ability of the encadreur to master and then communicate improved farming techniques to farmers. The classical system of encadreur recruitment, training and placement within a predominantly agrarian society whose educated young aspire to perform more dignified tasks in urban-office situations, is largely at fault. While an overnight reformation of the system is not possible, the project should be looking, along with DRDR, for possible ways to improve the encadreurs' performance through training, monitoring, assignment of responsibilities, and logistical support.

The other projects in the Kara have chosen to sidestep the issue and have recruited their own extension agents, according to strict criteria. These agents are then trained by the respective projects and receive most, if not all, of their prerequisites from that project. They benefit from a system of incentives and "encadrement" (in-service training and surveillance) that DRDR cannot provide. At least one activity, Projet Vivrier, wants to move towards a "paysan vulgarisateur" (farmer-agent) mode of field extension advice. The center and DRDR can learn from these other experiences and changes should be incorporated into the system. Effective agents, no matter what their background, in all area projects, must be an overriding objective.

E. "A revolving credit fund will be established to finance the purchase of oxen and agricultural implements and other inputs for the participating farmers."

Credit, along with training, animal and equipment supplies, animal health and effective encadreurs, is another of the extremely important factors involved in a successful AT program. The evaluation team found that the administration of credit is among the weakest of the project sub-activities. Furnished through the project, rather than through the existing financial institution, Caisse Nationale de Credit Agricole (CNCA), the project's credit activities are suffering from poor planning, poor record-keeping and poor follow-through. Little thought is being given to the economic and financial aspects of credit - credit worthiness, the cost of money, the cost of administration, etc. To some extent, the project's credit activities reflect the conceptual shortcomings of project design and also the present disorderly state of small-farmer credit throughout Togo.

Project rapport was never established with the Kara branch of the CNCA. Although initial contacts were made at the outset of the project, the credit terms

proposed by the project to CNCA were so radically different from those on the books that the Kara CNCA agent was obliged to refer the propositions to his headquarters in Lome. The matter must have died there, though it was hardly the fault of the CNCA personnel. Rather the project AT program is simply too small, in terms of the total amount of credit involved, to influence CNCA all by itself.

Not does a quick and easy resolution of the small agricultural credit policy and practice in Togo seem to be in the immediate offing. Various plans are currently in practice in the Kara region; still other credit schemes are underway or proposed in other regions. The evaluation team admits that a unified credit policy might not be possible across the whole country, given variations of local needs. But since the GOT has taken a major decision to introduce animal traction on a large-scale, there is a challenge to come up with a financial plan to guarantee AT's implementation under terms that will permit it to become self-sustaining. The alternative is to offer easy terms (even subsidies) as part of a political decision that will reap some short-term advantages and almost certainly assure another counter-productive chapter in the history of the Togolese rural economy.

The AT project should participate actively in a dialogue with CNCA and with other donors (and with other Togolese credit organizations) with the object of arriving at a credit program that is simple, firm and understood by all parties. Upon request of the GOT, AID should be prepared to offer outside expertise, if need be, to contribute to the establishment of a credit program. Agricultural economists, attached to REDSO/WA, may be a source of expertise.

F. "Five animal traction subsites will be established for both demonstration purposes and to serve as an immediate resource base for animal traction farmers."

The Project Paper recognized the need to establish AT backstopping of farmer-users in the early stages of the program. The goods and services requisite to a successful introduction of AT were to be based at five small subsites, coincident with the site-assignments of the five Peace Corps volunteers who work with the project as field agents. However, no budget provision nor organizational structure was ever made, nor was even physical description provided. At best (or worst?) the five volunteers (seconded by a counterpart DRDR encadreur in each instance) were given a multitude of tasks, about which they had been trained to do only those relating strictly to draft animals and the equipment. It was probably assumed that volunteers, once at their posts, would somehow create the essence of a subsite that could perform all of the AT project requirements. This never really happened.

The places selected for these subsites are all located on the outside perimeter of the Kara region, as it was three years ago. These sites are remote and are not included in the "project zones" covered by the major-donor sponsored activities. It has been a major effort in the course of project implementation, to supply these subsites from the center in Agbassa. Volunteers told stories of driving long distances, sometimes with a farmer on the back of a motor-bike, to find a replacement part for a broken field implement during a crucial point in the field work.

The primary role of the volunteer at these subsites was to be in charge of monitoring the training given by the subsite encadreur to area farmers and to give actual training to both encadreurs and farmers, whenever necessary. In fact, many of the volunteers found themselves enmeshed in a tangle of responsibilities about which they were unprepared to deal. As an outpost within the DRDR structure, they were occasionally called upon to provide goods, services and extension advice on matters ranging from seed distribution to pesticides, from marketing of local produce to

of these responsibilities, to permit them to concentrate on what they view as a specific task, i.e. to train others in the animal and mechanical functions required to move oxen-drawn agricultural implements through a field in an effective manner.

It is too late in the course of this project to change either the structure of the subsites or the responsibilities of the volunteer. Recommendations can be made, however, for any follow-on phase to address these issues. First, the subsites should be shifted to either existing facilities (which will need some repair, renovation and operating funds), or to ~~simply conceive and build (kamina-style,~~ after the PRODEBO subsite near Atakpame) subsites which would include a corral, stable, warehouse, workshop, office and lodgings situated on about 25 hectares of land. Secondly, both the volunteers and the encadreurs need a broader preparation for their assignment. AID, the GOT and other collaborating agencies must devise a comprehensive AT support project that does not neglect or downplay advisable basic farming methods. Peace Corps volunteers will be requested to play a role in the development and dissemination of these techniques, in conjunction with their role as AT trainers/advisors.

G. "Local level agricultural extension agents (encadreurs), ten oxen trainers, thirty blacksmiths and subsector level veterinary agents, will receive training through on-job or short-term training courses."

Operating on the principle that no amount of training is enough, this final output regroupes most of the project personnel and tries to ensure that those engaged under each component will receive training adequate for the performance of their job, whether it be in a formal or non-formal setting. The case of the encadreurs' training program has been already looked at above. While insisting on the necessity of training, the evaluation team had made some allowance for the fact that proper facilities have not existed heretofore to permit training of all parties in a comprehensive fashion. However, some starts were made.

Oxen trainer: At least ten oxen trainers are qualified in the basics of AT techniques. This includes "breaking-in" an ox and the adjustment of yokes and draft equipment; it also means that these oxen trainers have received instruction in basic livestock husbandry. Oftentimes, oxen trainers are taken from among those farmers with some prior experience in handling animals. An oxen trainer is supposed to have mastered AT techniques himself, and be able to pass on these techniques to farmers who have been given a pair of oxen. The oxen trainers engaged by the project have the opportunity to accompany farmers and oxen to their farms, to demonstrate working with the oxen on the new-owner's own field and to counsel the farmer in the up-keep of implements, in the construction of a simple stable (often an old modified mud hut), and in the choice of animal feeds, particularly with regard to dry-season feeding. Oxen trainers are playing an important role in the dissemination of AT techniques and their valuable participation should be encouraged. Additional oxen trainers should be trained so that eventually every 10 - 20 farmers using an AT unit will enjoy this backstop within their locale. The oxen trainer is the closest example of the "paysan-vulgarisateur" who is working with the project. Many of his tasks are non-renumerative in a monetary sense and a farmer AT-user may pay the oxen-trainer in-kind for the training he receives.

Blacksmiths: The incompleted workshop at the Agbassa center (due to lack of cement) has delayed the implementation of this training component. Now, having waited for the shop to be built and equipped, there is some speculation among project personnel that a fully operating blacksmith shop, which also serves as a training center for area blacksmiths who will develop skills in the manufacture

and repair of AT equipment, may no longer be necessary. Since the Project Paper was written, several other projects in the Kara area have begun operations, each of them with at least one fully equipped metal-working shop. If these shops are not all easily accessible to farmers on the perimeters of the region, it seems that blacksmith training programs, currently under way in these shops, could provide requisite training for the entire area. The shop at Agbassa (only six kilometers from a FED-funded shop) would serve the needs of the center. (Yet to be addressed by either the center or the other funding agencies, is the issue of credit or an outright grant - for blacksmith tools and a supply of sheet, bar and rod metal. The original outlay of cash appears to be too great to expect an independent blacksmith to indebt himself without some assistance).

Veterinary agents: Again, delays in the construction of facilities is cited as the principal reason that training programs have not yet begun. To this must be added the absence of a trained veterinary agent, either based at Agbassa or nearby in Kante (with ready transportation available) who could conduct the requisite training. With the completion of the animal care clinic at the center and the transfer of a qualified veterinarian to Agbassa, a variety of problems could be resolved, all within the context of the existing Togolese Animal Health Service. First, animal husbandry training at the center should improve greatly. Not only can sub-sector veterinary agents receive instruction under ideal conditions, but oxen-trainers, encadreurs, volunteers and farmers are apt to receive a reinforced training in animal care including the symptomatic recognition and treatment of certain ailments. Second, the notions of animal care that are given at the center, can be followed up at the farm level with the planning of regular inspection visits. To the extent possible, some veterinary medicines and supplies may be stocked at the subsites and on farms for use by those trained in their use. Finally, the obvious advantages to animal health at the center are many. The veterinary clinic is expected to be more fully equipped in a succeeding project phase, and summary laboratory-type examinations/analyses at the center might be of practical benefit to the AT program.

## 18. PURPOSE

1. "To enable small farmers (60-80 farmers within the two years of the project and an additional 90 during the course of follow-on activities) to expand the effective area of agricultural production from less than 2 hectares to 5 hectares per farm-family site."
- ~~2. "To realize concomitant increases in food and cash crop production per farm and increased incomes for small farmers."~~

No precise figures have been kept to date by project personnel which would permit an evaluation of project-area farms over a period of years to show how production and income change with the adoption of animal traction and the transition to an integrated animal traction farming system. Increased farm production and income are the real purposes of the current project, the latter being a more comprehensive, if more difficult to obtain, reading of the benefits which can be attributed to the project.

Expansion of cultivated area: The evaluation team had the occasion to observe farmlands which were expanded due to the introduction of animal traction. While various figures were advanced to quantify these increases, none were precise. It is the opinion of the evaluation team that effective cultivated land under the management of an AT user, expanded on a scale from "not-at-all" (occasionally AT merely replaced manual cultivation) to two-fold. Land clearing can be a tedious process, requiring many man/days. The strength and ability of draft animals in their first year is well below their capability in later years. This explains the reduced land expansion from objectives set in the Project Paper, at least over the first two years of the activity.

Impact on productivity: None of the AT projects in the Kara region are able to present statistical evidence which attests to improved yields with animal traction over manual farming.

Due to the parallel introduction of additional components in the production package (fertilizer, improved seed, pesticides) and the advantages of working new soil, the comparison in productivity between AT users and non-users in the so-called project zones is literally impossible. While project farmers interviewed verbally attested to increased yields (even without the additional components, as is most often the case in the area covered by the present project), it is doubtful if in the first two years of the project, either man or beast is skilled enough to work the new farming system to its full advantage. As cotton is a relatively new crop in much of the region, there is no historical data with which to compare current yields.

Animal traction projects generally claim improvements in productivity from recycling of crop and animal by-products. Area farmers and their wives have traditionally covered their fields prior to spring rains and first plowing (by hand) with animal and crop residues that accumulate during the off-season. It is doubtful whether these collected residues are in sufficient quantity to have the same beneficial effect on yields on an expanded hectareage. Volunteers indicated that chemical fertilizers (when available, and then usually only through the cotton company, at new high prices that reflect the removal of the government subsidy) are inadequate substitutes due to poor application techniques, insufficient dosage (fertilizer calculated for cotton hectareage is spread over the entire crop field) and high costs which occur at the time when the AT farmer is experiencing his heaviest cash commitment in equipment investment. Risks associated with the investment required to adopt intensive farming technologies are persuadign project AT users to pursue a safer area expansion strategy at

due to the potentially promising, yet at that time, inconclusive and unconvincing AT system that had been put in place under SORAD, with PS and AID support, that the present project was given the opportunity to reinforce its capabilities, develop support services and help to work out the problems of on-farm suitability and farmer acceptability of the AT technology and farming system.

The project was also conceived at a time that the GOT had opted for the ~~capitalization of the rural economy, complete with mechanization of land clearing and plowing.~~ While motorized land preparation enjoyed only a brief period of popularity, the GOT commitment in terms of capital and political energy was so great that scarce resources were not allocated to animal traction. With the literal demise of the tractor rental program and given a stagnant rural traditional economy which finds itself under increasing demands to feed a growing urban industrial population, the GOT has been forced to reassess priorities (i.e. investments) in stimulating agricultural production. Past experiences with motorized mechanization, the pilot projects sponsored by the donor community (such as this AT project) and economic realities have combined to stimulate a shift in the direction of the adaptation of an AT policy orientation.

This AIP has served as an effective pilot project, to test an appropriate technology on a larger scale than had been heretofore attempted, and to investigate the possibilities for replication of the technology and the requisite support organization on a national level. The present AT project has been able to probe the serious aspects of an AT package. Based on six previous years of scattered experimentation, the three years of elapsed field implementation time has given project staff the opportunity to develop, test and extend the recommended AT technology progressively throughout the project area. Working out slowly the package description and the terms of ownership for AT is an advantage to the farmer and to a program of AT extension. Launching full-scale credit and extension programs before the basic technology is proven is a waste of resources. Given the experience of the Agbassa center and the associated field extension agents, there now exists a base of information that can be used in subsequent project modification and redesign.

The impact of the present AT project upon GOT policy and program planning as well as upon the adoption of AT technology by area farmers, has been enhanced by its loose association with the major area resettlement project, sponsored by the FED. Not only has the FED project possessed the means to implement most of the requisite major material elements of an AT program, it has been guided in the introduction of AT by staff which is conscious of the improved bio-chemical technology which needs to support the mechanical components. Increased productivity and income returns from food and cash crop production are essential preconditions for widespread adoption and successful utilization of the AT package. This project has benefited from this contact with the FED; any available project resources would be well spent in continuing research and applications into the bio-chemical aspects of AT. Neither the GOT nor the prospective user-farmers can be sure of the "means and incentive" to adopt and institutionalize AT if productivity and returns do not improve. The present project, and other similar area activities, are beginning to demonstrate the viability of the AT package. Much additional work remains to be done.

## 20. BENEFICIARIES

Aspects are reported above in response to questions on output, purpose and subgoal/goal.

first, in which yields may not improve but overall production figures per farm may rise appreciably in the first few years.

Improvement in income: No attempt has been made to study change in farm income as a result of the introduction of AT in the Kara region. Any meaningful examination of the question will have to be done outside of the expertise presently available to the project. ~~Proposals for AID participation in such a study in the five Entente States are well-founded and if funded, could provide~~ some answers to the evaluator's perennial query of whether increases in income represent net increases in family income, or if instead they necessitated a reduction of time, effort and resources devoted to other productive farm or household activities.

#### 19. GOAL/SUBGOAL

"The ... project will provide the means and incentive to establish regional systems promoting adoption of animal traction technology by small farmers."

The present AT project was born and has survived under difficult circumstances. It set out an ambitious goal and allowed itself but two years to realize its objectives. During the life-of-project (now to be extended into a third year), the project has played an invaluable role in influencing the gestation of AT policies, planning and programs in Togo. At the moment, while all of the problem areas in the AT package have not been fully addressed or resolved, the Togolese government, based, in not a small measure, on the apparent demonstrated effectiveness of the several Kara region AT related projects, is about to undertake several major decisions which will impact on the rural economy and the lives of its peasant farm families.

The infrastructure, the systems, the personnel and their methods, developed in the course of this project, are now being solicited by the GOT to join in an integrated program of new agricultural technology.

In 1978, at the inception of this project, animal traction activities in Togo were almost non-existent. With the exception of a large, but short-lived agricultural production project in the Savannah region in the mid-sixties, no thought had been given to the introduction and encouragement of AT on a regional basis. Even the BDPA effort in the Savannah sadly lacked the establishment of relevant support systems. Only isolated instances of AT utilization, usually at the sponsorship of a religious mission or expatriate volunteer organizations, even pretended to pursue the investigation of the application of AT to Togolese farming.

Sustained Peace Corps involvement in AT began in 1971 with the arrival of five volunteers assigned to the Kara region SORAD (predecessor to ORP and DRDR) as field extension agents in AT. There was no program to "extend" and for six years, volunteers were obliged to rely on a variety of resources to promulgate a program that received very low priority in GOT rural planning. AID became somewhat involved (or rather implicated) in these ill-conceived pilot activities through the instrument of the Ambassador's Self-Help Fund which dispensed funds on several occasions in support of various aspects of the animal traction activities: animal purchase (ostensibly to create a revolving fund), construction of a stable, warehouse and lodgings - the first makings of the Agbassa center; furnishing of basic equipment to use in making yokes, harnesses and metal accessories. It was

## 21. UNPLANNED EFFECTS .

Not applicable.

## 22. LESSONS LEARNED: RECOMMENDATIONS

### I. General

It is too early yet to judge if the animal traction package offered by the project has had any appreciable effect. This is because farmers have not yet had enough time to master all of the technology involved and also because there are certain modifications in the package which must be made to adapt it to the needs of farmers. Project personnel have made impressive progress in constructing the center at Agbassa, in setting up a system for the purchase of draft animals, and in getting farmers started with AT. Now more emphasis should be put on training of extension agents, veterinary agents and artisans who can support the diffusion of the new farming system. The project staff should work towards integrating the project into existing governmental institutions, such as CNCA and the DRDR. Project staff should also spend more time with trials of equipment in order to adapt it to the farmers' needs.

The following is a list of suggestions as to how to improve project performance.

### II. Animals

Project staff have been considering using a single ox and a team of cows for work on light soils and for weeding. Trials of this concept should be started immediately even if it is only done at first at the Agbassa center. These options offer a partial solution to the problem of animal supply which is bound to become more acute as donors pour more money into credit funds for AT. A single ox is easier to feed and easier to handle. Cows, on the other hand, require good feed if they are expected to produce milk as well as work. Both systems are worth trying.

The single operator method of handling a team of oxen should be encouraged and continued.

Tattoo pliers for permanent marking of draft animals for insurance purposes should be tried. Sometimes farmers refuse to have their animals marked, saying that people refuse to buy draft animals. However, in Upper Volta people actually wanted their animals permanently marked to prevent theft.

### III. Tillage Practices and the Equipment Package

Farmers should be dissuaded from taking equipment they won't use. In some areas, farmers use their plows only on bottom lands. On lighter upland soils they use their weeders to break up old ridges and then re-ridge. They might plow new fields. However, if they have little or no bottom lands, they may not need a plow and should be dissuaded from buying one. Other farmers who plow all their land and don't weed with AT, may not need a weeder. The project management should also take a hard look at the value of the harrow. It would appear sensible to have one for heavy soils, but if it doesn't work well or if farmers don't use it, then it shouldn't be pushed. Harrows have not caught on in most areas of West Africa.

We should attempt to get away from the idea that it takes the cart to make AT profitable. This may increase the farmers' income but it doesn't necessarily help to achieve the project goal of increasing farm production. Eventually, competition among cart owners will reduce the profitability. This is not to say "eliminate carts", but rather "rely less on carts" to carry all the load. The tillage package should be able to pay for itself. There are many ways to improve it and increase animal use and profitability.

A minimum tillage system using chisels attached to the weeder (currently available) should be tried out. Use of this tool would also permit pre-rain tillage in some areas. This could be a significant means of breaking the seed bed preparation/seeding labor bottleneck at the start of the rainy season.

Another means of getting a jump on rainy season plowing is by the use of two teams in tandem with a chisel pointed plowshare, also currently available. This should also be tried at the end of the rainy season in order to plow under organic matter, a process which improves soil water retention throughout the dry season.

The possibility of using ox power to irrigate gardens along the area rivers should be explored. Use of a dalou system keeps animals well-trained, increases their use during the dry season and permits farmers to irrigate up to 0.4 hectares with little effort.

There were basically four different reasons given why farmers are not using their AT equipment to weed:

(1) Farmers are scared of the damage a rampaging pair of oxen could do in their fields. This is partially from customary desire to protect their vital food crops with almost individual plant care. It is easier to introduce weeding on cotton since it is not a food crop and since it is generally planted at the correct spacing so as to permit AT assisted weeding. Once they get used to weeding cotton, farmers may be more willing to attempt it on their cereal crops. This fear also stems from a lack of confidence in their ability to handle oxen. A single ox can be much easier to handle than a pair, especially a pair using an unwieldy weeding yoke (which is much longer than a plowing yoke). It is much easier to overcome this fear if farmers have seen other farmers doing it or at least if they have talked to farmers who have done it. Organized visits by new farmers to a farm where weeding is done can be a very effective extension device, especially if farmers are left to discuss things among themselves.

(2) The second reason given for not weeding is that the equipment is not adapted to weeding crops as they are currently being planted. For rice, this is a problem and herbicides may eventually be necessary. For shoghum and peanuts, a common intercropping system in the Kara region is to plant peanuts on the tops of ridges and plant sorghum on the sides. A possible system of weeding between the sorghum plants would be to use a peanut lifter. Timing is critical in this operation. It must be done when the weeds are fairly small (4 inches) and the ground is not too dry. The plow beam must be adjusted so that the peanut lifter cuts just below the surface, cutting off the weed roots.

Corn and peanuts are sometimes planted as a sole crop on ridges. "Scraping blades", attached to the ridger, as described by Rob Shulman\* have worked

\*Shulman, Robert, "Strategy for the Advancement of Animal Traction in Mali".  
November 1979. USAID/Mali in liaison with the Agriculture Machinery Division.

successfully on light soils in Benin and should be tried in Togo. They scrape the sides of the ridges and throw dirt up on top. In Upper Volta, farmers used small (6 inch) donkey plows for weeding. Although this is not as efficient since it requires two passes down a row, it is effective and could be adapted to a pair of oxen and the 9" ARCOMAS plow. All of these options ought to be attempted in Togo, as well as the more standard system of plowing, planting in lines on a flat seed bed, ~~using the weeder once or twice and then ridging to prevent lodging.~~ The farmer must be shown alternatives and he must be shown that they can work.

(3) The third reason given is that women weed and therefore men (who own the draft animals) have no incentive to weed with their animals since it would be an increase in their work load. In most cases in the Kara region, men do the weeding or at least most of it. They do have an incentive to weed with AT, at least to diminish the backbreaking work of weeding. People might not be so wedded to the use of collective weeding, that they will not drop it if they could do it themselves. Collective weeding is an expensive way to get the work done.

(4) The major constraint in the weeding system is the restricted amount of time available for weeding with animal traction. Directly after a heavy rain, the soil is too wet to get into a field. A farmer must wait a day or two. At weeding time, rains are coming every two or three days and the farmer may never really have a chance to get into his fields with his team. He cannot delay weeding until he gets a chance with AT, so he is obliged to weed by hand.

However, earlier on in the season, there are usually longer dry periods and farmers do have the time to get in and weed while the weeds are still small. On well-drained soils this is less of a problem. It is a matter of timing. Farmers located in areas with similar rainfall patterns weeded with AT in Benin.

It is not easy to introduce weeding but it can be done with persistence, hard work and good demonstrations. One immediate step which could be taken is to plant some trial tillage plots with different crops. Get the PCVs to write down the different crop combinations and densities in their areas; then practice weeding those plots and adapt the equipment. Everything that's needed is at Agbassa.

#### IV. Animal Traction as Related to Other Improved Agronomic Practices

Animal traction is not sufficient enough of a technical package by itself to increase production. Eventually, the introduction of this technology will have repercussions on a whole range of agronomic practices such as the use of improved seeds, the crop mix, the use of correct densities, the application of fertilizer compost and manure, methods of seed bed preparation and weeding, rotation systems, forage crops, erosion control and settled, mixed farming. Any follow-on project should have an agronomist/extension advisor who can run demonstration/trials on the subcenters around the two regions. He/she should be responsible for helping in the preparation of a more complete package and should be responsible for teaching this package to the extension agents. He/she would also be able to help adapt the AT package to local conditions.

There should be a redefinition of the role a Peace Corps volunteer can play in field extension of the agronomic package. Nowadays, volunteers are reluctant to advise farmers on agronomic techniques because of limited knowledge and a desire to share responsibilities with DRDR field staff. However, PCVs should

get involved to the extent that it affects animal traction. For example, farmers cannot weed if they don't plant in rows. Volunteers could begin by helping encadreurs to extend this notion to area farmers.

#### V. A Redefinition of the Project Coordinator's Role

~~The AID-funded project coordinator should be spending more time on project implementation.~~ Currently, he has taken on a big load by serving as an unofficial Peace Corps Staff person. This role is not his responsibility and Peace Corps should be asked to accept and to carry out their obligations to volunteers in terms of volunteer support. Enough said.

#### VI. Animal Feeding

Greater efforts should be made to get farmers to store their crop residues, such as rice straw, bran and peanut and cowpea hay. These are all nutritious feeds. A simple place to store them is in a tree (so they are shaded and away from small ruminants).

The project should try out different forage crops including Mung beans, Dolichos lablab, Pois d'Angole, Leucaena leucocephala, Columbus grass and other species with an eye towards finding a crop which will fit into the cropping system (into the farmers' cropping calendar and into a crop rotation system, with an emphasis on maintenance of soil fertility as well as production of high quality feed). Seeds for this purpose are available from CERIC (Centre d'Experimentation et de Recherche sur les Cultures Irrigues) in Bobo-Dioulasso.

#### VII. Improved Training

The idea of organized visits by farmers to see "model" farmers should be tried out in September and October when there is a slight decrease in a farmer's labor demand.

In the future, the demonstrations at the CAT's (Centre d'Appui Technique) should serve two purposes:

- they will help Peace Corps volunteers and other project staff to adapt the package to local conditions and
- they will serve as useful demonstrations for other farmers.

Now that the dormitory at Agbassa is finished, a greater effort must be made to train encadreurs. One of the most depressing discoveries of the evaluation team was the fact that most area extension agents have received only one to two weeks instruction in animal traction.

A rudimentary training should be given to blacksmiths to show them how to make landsides, plowsoles and yokes (to adapt for weeding, plowing and for mono oxen). Blacksmiths should be taught also how to fix wheels, as this is a part which wears out quickly on ARCOMAS equipment. They should know how to draw out partially used plowshares to extend their life. They could also be taught to make tire irons and how to repair inner tubes.

#### VIII. Supply of Raw Materials for Blacksmiths

A critical problem for most AT programs, once they get established, is to locate sources where blacksmiths can get raw materials for spare part manufacture. An attempt to find truck springs for plowshare manufacture should be made in Lome. Project management should also consider going to the CNPAR/SACS (Centre National de Perfectionnement des Artisans Ruraux) in Ouaga to study that system of raw material supply.

### IX. Credit System

The project really should begin to integrate its credit system into the CNCA (Caisse Nationale de Credit Agricole), even if it means raising the interest rate for the new farmers (old AT-users will have to be carried on the old system). If a working relationship is established with CNCA in order to draw up the terms and conditions of AT loans, ~~the project's task in the future will be made much~~ easier. The project must begin to help build up the institutional capacity of CNCA before the big influx of credit in the next few years.

### X. Project Monitoring Evaluation

Project extension agents (Peace Corps volunteers and DRDR encadreurs) should be required to obtain some base line data on farmers using AT. This should include at a bare minimum:

- Farm area under production before AT;
- Basic household census data (how many active farm workers);
- Area where different tillage practices are performed using AT;
- Total area cultivated after AT;
- Time use by draft animals doing different operations;
- Income from rental work;
- History with AT (when started work, animal sickness, etc.).

This is all fairly straight forward information. It should at least give some idea how we are doing in increasing production and it should indicate areas where we can improve performance.

### XI. Land Clearing

FED and PRODEBO's suggestion that the project get involved in supplying monkey winches should be followed up. This would go a long way to help farmers with the difficult task of land clearing. Two-man teams could run the winches and this should prolong the life of the machines. Farmers should be required to feed these men while they work to encourage wholehearted cooperation on their part. Farmers should be required to dig out around trees that are to be removed and to cut the roots.

### 23. SPECIAL COMMENTS OR REMARKS

Not applicable.

Credit, along with training, animal and equipment supplies, animal health and effective encadreurs, is another of the extremely important factors involved in a successful AT program. The evaluation team found that the administration of credit is among the weakest of the project sub-activities. Furnished through the project, rather than through the existing financial institution, Caisse Nationale de Credit Agricole (CNCA), the project's credit activities are suffering from poor planning, poor record-keeping and poor follow-through. Little thought is being given to the economic and financial aspects of credit - credit worthiness, the cost of money, the cost of administration, etc. To some extent, the project's credit activities reflect the conceptual shortcomings of project design and also the present disorderly state of small-farmer credit throughout Togo.

Project rapport was never established with the Kara branch of the CNCA. Although initial contacts were made at the outset of the project, the credit terms