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ASSOCIATION POUR LA PRODUCTIVITE AU TOG

The Green Revolution Africa-Style:

Toward Defining

A Technology for Rural Productivity

in Togo, West Africa

THE ZIO RIVER ECONOMIC DEVELOPMENT PROJECT
MIDTERM EVALUATION

by

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TOWARD DEFINING A TECHNOLOGY OF RURAL PRODUCTIVITY IN TOGO, WEST AFRICA

Zio River Midterm Project Evaluation

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APP	:	Association Pour la Productivité
CNCA	:	Caisse Nationale de Crédit Agricole
CRZ	:	Centre Rizicole du Zio
DESA	:	Direction des Enquêtes et des Statistiques Agricoles
DRDR	:	Direction Régionale du Développement Rural
FCFA	:	Monetary Unit of the Union of Francophone African Countries
FUCEC	:	Fédération des Unions Coopératives d'Epargne et de Crédit
G O T	:	Government Of Togo
IITA	:	International Institute for Tropical Agriculture
PfP	:	Partnership for Productivity
S O T O C O	:	Société Togolaise de Coton
USAID	:	United States Agency for International Development

Monetary conversion: CFA 300 = US $1.00

I. Evaluation Conclusions and Recommendations

Officially begun in August, 1984 after a year of small-scale field tests, the Zio River Economic Development Project had a mid-term evaluation in late 1986. The evaluation focused on defining and critiquing the approach, methods and institutions that the Association pour la Productivité au Togo (APP) has employed. As later sections document, APP's intensive approach to farmer training, credit and management training has resulted in real gains in yields, income, and skills among participating producers and has begun changing traditional ways of economic behavior. What is significant about the Zio project is that APP has integrated together applied agronomic research, extension, credit training and a small business development program in ways that make it possible for small farmers to adopt modernizing changes. This combination of services is a rarity among rural development institutions in Africa where these four almost never function together successfully. On a continent where agricultural extension systems are weak and do not treat farming as a business, the Zio River Project deserves serious consideration as a model (or the beginnings of one) that can transfer the benefits of modern technology--both production and management--to traditional producers on terms they can control and that have substantial beneficial effects on the local socio-economy.

The biggest "pro" of APP/Togo's integrated approach to rural economic development is that in two years time it has established the possibility of a more profitable small farmer agriculture in the region. People now know that they can intensively raise multiple crops; produce food crops of higher value; and use effectively modern inputs, practices, credit, and training institutions. Not just production is changing, but a whole series of habits and thinking about the use of technology, management and investment in an economic activity to increase its scope, quality and profitability. The "con" is that only the *possibility* of a modern, alternative agricultural economy has been established: much work remains to make it a reliable reality over time. Establishing a viable program in the future will depend on APP/Togo's ability to serve larger numbers more cost efficiently without losing effectiveness to transform traditional behavior and help producers engage in profitable small enterprise activities. Having both the "quantity" with the "quality" required for this kind of transformation at the human, enterprise, local economic and institutional levels is difficult to accomplish.

Another bright spot of potential of the Zio project is the seriousness with which the APP staff treats the systems and methods they are developing as technology, and their desire to share it with other rural development institutions in Togo and elsewhere. APP staff are aware that the program and policy questions they re taking on are at the heart of defining how the Green Revolution can occur in the context of African local economies and institutions. Important other rural development agencies such as the

International Institute for Tropical Agriculture, the Togolese Ministry of Rural Development (DRDR), and the Federation of Togolese Credit and Savings Cooperatives (FUSEC) are sharing the technical benefits of this project, and in turn helping to shape APP as an institution so that its rural productivity technology is more widely adaptable by a variety of public and private sector institutions. Two questions of technology transfer are how to replicate APP's systems approach that combines producer training with credit and small business development, and cost effectiveness--ie., how APP's training and credit can be delivered at a more affordable cost.

Even if APP/Togo helps producers to manage risk, it faces many risks of building itself as a sustainable institution. These were dramatically apparent when APP's mother agency, Partnership for Productivity/International, went out of business in December, 1986. The US Agency for International Development switched its contract to implement the Zio River Project from PfP/I to CARE International. Local APP staff will continue in place, and CARE is conscious of the need for stable continuity. But how will this affect the implementation of the project over time? Will the striving continue not just to be more cost efficient, but to do so while defining Green Revolution methods and systems? Because this turn of events is so recent, the evaluation does not discuss the longer term ramifications of this major change. Nonetheless, the international managing agency of a local productivity institution like APP/Togo cannot fail to impact on how an approach to agricultural and economic modernization is defined.

Apart from this unanticipated major change in implementation agencies, the mid-term evaluation arrived at 5 conclusions and makes 15 recommendations concerning the program implementation of the Zio River Project.

Conclusions:

1. Develop an Approach that Continues to Be Effective but Is More Cost Efficient and Reaches Larger Numbers Sustainable increases in productivity are a function of changing a whole worldview and context in which economic activity occurs, and not just a few practices. APP/Togo's approach, methods and systems thusfar appear to be effective in changing practices. APP/Togo should continue to pursue in an intensive way its holistic approach to small farmer development and local economic modernization in order to solidify and expand gains already made. But it should make the approach more cost efficient and accessible to larger numbers of producers. Suggested changes include diversifying APP's forms of service delivery, including some ways that are not as intensive or systematic to introduce innovation. APP should also give attention to where other private and public institutions fit into the approach and make serious use of them. The pros and cons of these different forms of service delivery should be analyzed, so that each of these modes is made more impactful by learning from others. Avoid just one way of doing things.

2. Build Economic Support Institutions that Are Designed for Sustainability over Long Periods of Time Success in getting producers to adopt new technologies produces dramatic increases in productivity, but also greatly increases risk. Accordingly, the most important modernizing influences over the long term will be the establishment of reliable institutions (credit, input supply, marketing, savings) that mitigate risk and satisfy over time the demand for economic services. The essence of sustainability is having affordable services and being able to pay recurrent costs. The latter includes the ability to generate non-restricted income from local and other sources as well as cost management.

3. Increase the Number and Diversity of Producer Groups APP Promotes A major mechanism for institutionalizing local agricultural and economic development is the formation of viable producer groups. Groups can make economic, learning and labor investments far beyond the capabilities of individuals. They are key to increasing the productivie use and maintenance of the Zio Irrigated Perimeter. APP should continue to develop its economic group promotion methodology and adapt it to various kinds of producers: rainfed farmers, water users associations, animal raisers, food processors, artisans, small traders, young produers and rural savers. The application of economic group formation methods to producers other than farmers will also make the services of APP and benefits mroe accessible to women with economic activity. A commendable aspect is APP's flexible approach which comprehends that in order to function well a producer group must serve the economic objectives of its members rather than be an apparatus primarily to extract labor or for administrative convenience.

4. Define More Concretely APP's Private Sector Approach to Developing the Zio Irrigated Perimeter and Building Regional Economic Support Institutions In two and a half years APP has put in place a promising methodology for local agricultural and economic development based on increasing farmers' agricultural surplus. The next immediate steps which local producers can take to add value are processing and marketing. In 1987 APP should formulate a strategy with a budget for how it intends to work further in the Zio Irrigated Perimeter and promote an increased amount of transformation and marketing activities which producers outside the Perimeter can access also. If there are agri-support private enterprises that local economic development requires and/or if APP itself will be engaging in revenue generating activities, feasibility studies should be done for those sooner rather than later. Togo offers a very favorable context for private sector activities and income generation by PVOs. APP should take advantage of these conditions early on so that the way it spends down grant funding and makes choices about what to subsidize create a capacity for sustainability later on.

5. Pursue Policy Impact and Transfer of Productivity Technology by Meaningful Collaboration with Other Rural Development Institutions Although serious institutional collaboration costs time and effort, it offers much promise to develop hybrid approaches and methods for promiting rural productivity that are more flexible and effective than can be developed by an agency working in isolation. As an institution that is dedicated to productivity, APP should welcome opportunities to receive and transmit thinking, methods and designs about this. APP's paradigm of treating farming as an enterprise rather than simply a production unit is one that has much attraction to other rural development agencies in Togo. Small, well-conceived and executed collaboration plans are the best way for APP to have policy impact beyond its project region and to exchange its methods and systems with others. But meaningful collaboration takes time to achieve. It must be diplomatically arranged, carefully planned and conscientiously pursued by both parties.

Recommendations:

1. Take the elements of the present approach that has worked and apply them increasingly to group mechanisms. Set quotas and monitor the extent to which APP's systems are being transformed from an individual to a group approach. Reorient APP personnel to be trainers of trainers.

2. Develop other less costly and intensive forms of service delivery. Promote model client and other grouping mechanisms. Collaborate with other institutions, perhaps by supplementing the work they do but allowing them to organize and supervise beneficiaries.

3. Charge for credit education and production and management training. In addition to whatever revenues may be generated, it will make both producers and agents more conscious of managing their time effectively.

4. Increase internal management efficiency in terms of the ratio of employee costs to the value of client projects and a more refined personnel evaluation system with incentives and sanctions.

5. Test a less intensive approach to introduce agricultural innovation that does not involve credit. This approach should be technically sound and be based on demonstrations, dissemination and increased training of farmers by other farmers. Responsibility for the design of this should remain with the project agronomist, and for the management and communications systems there should be a Togolese counterpart. Monitor results.

6. For 1987-89, define more concretely a systems approach for the development of rural non-farm enterprises. This includes defining technical packages for different types of economic activity; differentiating credit policies and business development education for these different types; forming economic groups and marketing assistance.

Toward this end, dedicate personnel within APP/Togo to develop the rural non-farm enterprise component. Designate the APP mechanic trainer the

responsibility of managing a staff specifically trained for rural enterprise development. This staff will initially consist of the two zone chiefs and two field agents.

7. Study and incorporate into the rural enterprise component a strategy for promoting women's economic activities, especially in sectors where women have social license to make profits and build up assets.

8. For 1987-9 define clearly and practically areas of collaboration which are productive for APP and other rural development agencies. Continue to define and test methods of institutional collaboration such as:

--trying out other institutions' methods and approaches within the project region; allowing these other institutions' perspectives to modify for the better APP's ways of thinking and doing something.

--accepting other institutions' problems, priorities or challenges as central to oneself. Define and act on common needs. Test out different approaches and compare results.

--have periodic exchanges of views, trainers, methods. Participate in each other's significant events.

9. Look for ways APP can transfer its credit training (defining feasible projects plus changing economic attitudes and behaviors) to other institutions and transfer its credit function as well.

10. Do more comparative analysis about problems with agricultural credit and and approaches to solving them. Decide on a defineable reimbursement and correction strategy for trouble loans. Develop guidelines and examples for when the best corrective approach is technical, business management, related to support services, or behavioral. Emphasize early diagnosis and honest communication about problem loans.

11. Train program management staff in the use and analysis of data for management decisions, where possible by using computers.

12. Create agent and farmer training packages for the management of agricultural surpluses so that farmers understand how to manage and reinvest their profits. Both producing and managing a surplus are necessary for increased productivity.

13. Develop a comprehensive, realistic plan for the management of water in the Zio Irrigated Perimeter based on its use by farmers in several sectors of the perimeter.

14. Develop a plan for rototiller services in the perimeter and how these will be accessed by farmers.

15. Continue to analyze cost-benefit and cost-effectiveness aspects of APP services. Set up an economic model to determine more accurately the cost of services. Compare different optins on the basis of quantitative evidence.

II. Project Purpose and Issues

Project Purpose

The Zio River Economic Development Project is a five year Cooperative Agreement funded at US$3.5 million among the US Agency for International Development, the Government of Togo, and the implementing institution. It began in August,1984 and the first phase will run through September, 1989. Until December,1986 the implementing institution was Partnership for Productivity International through its local affiliate, the Association pour la Productivité au Togo. Management of the Zio River cooperative agreement and of APP/Togo has now been turned over by USAID to CARE International.

The purpose of the Zio River Project is to enable the inhabitants of the region to attain higher levels of economic, human and institutional development by increasing productivity through better utilization and management of resources. The legal agreement specifies four objectives to attain this goal.

1. To strengthen and develop local farmer-producer organizations that will make production more efficient and give producers greater control over input acquisition, marketing, dealing with agricultural development institutions and developing management skills.

2. To strengthen local agricultural institutions that enable Zio producers to make better use of their resources.

3. To institutionalize credit and management education, business development training, and adult problem solving education as resources that will enable the region's producers to develop a wide range of agricultural and agriculturally related economic activities.

4. To improve the productivity of the Zio River Irrigated Perimeter.

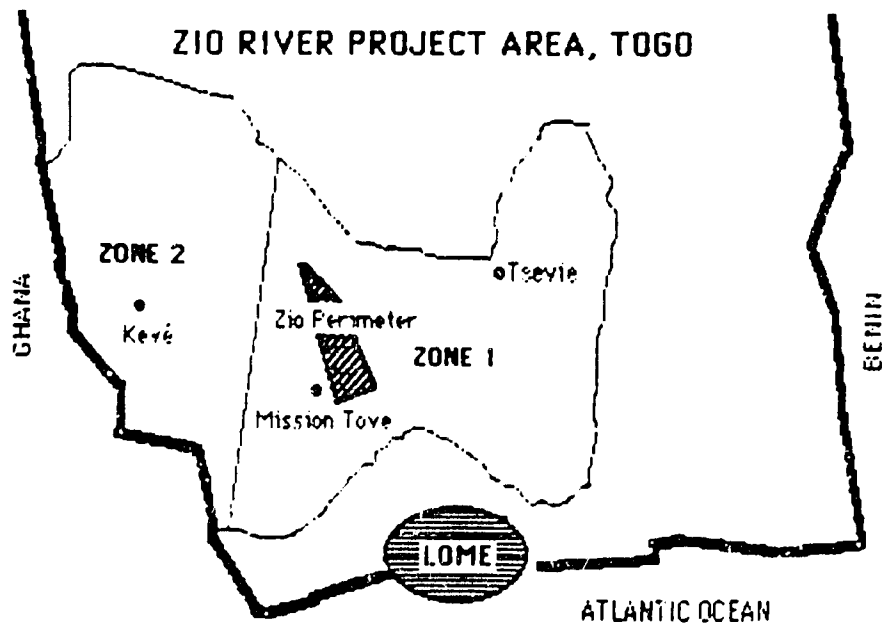
Project Context

Located in Southern Togo, the Zio River region is a well-endowed area, relatively speaking. Rainfall is sufficient to have two growing seasons, one from March to July and the other from September through December. The Ewe, the main ethnic group of the region, are a resourceful, hard-working people with widespread aspirations for upward mobility, an appreciation for education, and a sense of neatness and comfort in their lives. The project area is close to Lomé, Togo's capital, and is well connected by rail and paved road to this large urban market. An unusual feature of the area is the presence of a technically sound irrigated perimeter capable of watering up to 600 hectares built by Taiwanese and Chinese aid in the 1960's and 1970's. The macro-policy climate for rural and agricultural development is favorable. The Government of Togo is stable and has done much in recent years to promote a market economy more favorable to farmers and the private sector in general.

Despite these endowments, rural poverty is widespread in the Zio region. When the project began in 1984, a baseline study among 172 households in 1984 indicated the average rural family income to be ~$72 for the preceding year. For the mostpart, resources are not well utilized or managed. At project start-up, for instance, water flowed through the canals of the Zio Irrigated Perimeter, but it was covered with weeds and used by only a small number of producers who were not organized or trained to practice a modern, intensive riziculture muchless maintain perimeter infrastructure. The productivity of rainfed agriculture was also very low: yields of maize, the principal grain crop, averaged 800 kgs per hectare. Few farmers used modern practices or inputs such as straight line planting and fertilizer. Farmers grew mostly maize and cassava. There was not much success with higher value crops. Nor was agriculture practiced very intensively in terms of what is possible in the local climate for crop associations and multiple cropping. Even today, a widely prevailing strategy of agricultural production is to put more land under cultivation with the same low technology. This is part of a larger traditional mentality about economic activity to which thinking and practices about farm *profitability* is foreign. At project start up, less than 1% of those surveyed in the baseline had ever had a formal loan, and there was no experience with how to collaborate with a business support institution. It has been uncommon to find approaches that require producers to be profitable and financially responsible, and that reward serious intention, problem-solving and results.

Project Staff and Services

The project area is located in the Maritime Province of Southern Togo, just north and west of the capital city of Lomé. APP/Togo has three offices, one in Lomé and two in the project region at Mission Tové and Kévé respectively.



In 1985 APP placed four agents in the field and began offering farmer training and credit services to producers in Zone 1 of the project area. In 1986 APP placed six more agents in the field and expanded to serving clients in Zones 1 and 2. In 1987, APP will place six more rural economic development agents in the field and expand its coverage of the project area. There are also two zone supervisors, two warehousemen, two accounting assistants, and a secretary. The senior staff of APP/Togo consists of:

• general manager	John Schiller
• agronomist	Marvin Wilson
• agricultural economist	Foli Tinkoue
• credit manager	Hoedom Sossa
• rural enterprise specialist	James Winter
• group formation specialist	Peter Nerone
• administrator/accountant	Tony Mawuna

In addition to credit and farmer training, APP operates trials of improved agricultural inputs and practices on plots adjacent to the two field offices. The government rural development service the DRDR, has also put two agricultural warehouses at the project's disposal in which APP stores the fertilizers, seeds and other inputs. APP has two 25 ton fumigable warehouses in Mission Tové and Kévé where crops accepted as loan repayments are stored until they are marketed. APP has also 8 rototillers which it rents to rice farmers who are members of water user groups in the Zio Perimeter .

In the first two and a half years--the time covered by this evaluation--project personnel have concentrated almost entirely on services to agricultural producers: applied research, farmer training, credit, inputs, and essential services like spraying and rototilling. Project staff are being designated for more specialized functions at this point, however. There is a field agent specifically for irrigated rice groups. In 1987 there will be two field agents dedicated exclusively to developing non-farm rural enterprise.

Issues in Creating an Approach, Methods and Institutions for Raising Rural Productivity

When APP started in late 1984 to promote *productivity* it introduced an approach that was new to the locale. At this stage, what has APP done and does the approach work -- what preliminary evidence is there? What issues arise out of what has been done already and/or can be seen on the near horizon? Are other rural and agricultural development agencies working in the region interested in the approach and does it complement what they do? Does the approcah have potential to be sustainable over time? The evaluation report will look at these questions, although it is not possible to answer many of them based on the first two years of

project start-up. But it is important both for the practitioners of the project and for those who seek to do this elsewhere to be clear about the issues that arise in creating effective institutions for rural credit and enterprise development.

1. High Initial Costs to Establish a Serious and Effective Credit Training Program. A commitment to a successful credit program has major implications. It means selectively about who an agency accepts to work with. It implies that packages of technical recommendations must be feasible, and there must be a training system to insure that producers follow them correctly. It means that both the lending agency and borrowers must pay attention to profitability and economic performance. APP/Togo made the decision to introduce credit in a conservative way in order for the first examples to provide profitable and responsible role models for the potential borrower population. It decided that the credit and business development part of the program would not serve many until it first proved its effectiveness at loan recovery. This conservation is understandable from the perspective of establishing a financial institution. It is "the stitch in time that later will save nine". From the perspective of service delivery, in two years 422 small scale economic projects have been assisted by APP. The investment costs of 10 field agents and 21 total program staff are initially very high in relation to services delivered.

Questioning of APP's service delivery costs is valid, but it is also sensative--particularly coming from other institutions that don't deal with credit and the recollection challenge, and whose functioning depends directly or indirectly on a number of personnel in other agencies that are usually never considered when talking about costs. What should APP do to become more cost-effecient, and at the same time maintain an effective credit training program that local borrowers will respect? If APP does not reduce costs of service delivery, its productivity approach and methods will have little appeal particularly to public sector institutions. But it cannot simply trade off lesser cost for lower effectiveness, especially if the consequences are poorly executed projects and repayment problems.

2. Attaining a Treshold of Impact Sufficient to Transform Traditional Economic Behavior. The management of this project believes that its purpose is not to provide one or a few additional services, but to change the way people think about and practice economic activity. To begin doing this, APP has identified a small number of producers who are willing to make technological change (an "innovative element"), and worked intensively with them to manage risk--especially at first when the support services necessary for a more modern agriculture were not yet established. There is no specific level of income, sex, or type of economic activity that qualifies someone to become part of this clientèle. The selection criteria are a willingness to innovate, to follow technical assistance and to repay credit on-time. Once producers take the initiative to request assistance (APP tests how serious this initiative is), the agency sets performance standards. The issue surrounding this quality-intensive delivery of multiple services is the

number of people it can serve in a way that changes significantly their economic thinking and behavior. As APP's systems for credit, farmer training, and group formation develop, more producers will be served. But this approach will never touch large numbers: 700 economic projects per year receiving loans and follow-up technical assistance is probably peak capacity without adding more staff.

3. Exchanging APP's Productivity Methods with Other Rural Development Agencies that Don't Use a Systems Approach or Have Credit and Business Development A modern, small farmer agriculture requires many support services including inputs, plowing, spraying for pests, storage, transport, milling and other forms of processing and marketing. The presence of such services creates the option of a whole other kind of agricultural economy: one which is more intensive and based on the growing and processing of higher value crops. Multinational agribusinesses and/or parastatal agencies working with industrial crops such as cotton, cocoa, coffee or tea create this alternative by providing inputs on credit, technical assistance, a marketing arrangement, and setting quality standards for production. It is more of a challenge to establish modern agriculture with food crops for several reasons. Subsistence behavior is more engrained with food crops. Farmers also grow a diversity of food crops which makes it more complex to assist them than with a monoculture. Food crops are more perishable, etc. But how to modernize food crop agriculture and set up the services and institutions to support it is the major challenge of rural economic development in Africa.

In the Zio River region APP uses a "systems approach" and trains its field agents to deliver multiple services. Other Togolese rural development agencies find this systems approach interesting but difficult primarily because their personnel are trained for a narrower range of services. Other agencies don't combine agriculture research and farmer training systems together with credit and small enterprise training. And they don't have productivity and profitability as ends towards which their services are focused.

How can APP and other Togolese rural development agencies establish more communality? Talking helps, but institutions are like producers in that they too have established ways of thinking. For example, in discussing APP's systems approach with the public sector DRDR, their belief is that an agency needs to be well funded in order to adopt a productivity approach. Without a doubt, adequate financing improves any program. But the systems approach is a worldview that puts producers and their productivity first and arranges integrated service delivery to facilitate that. Many aspects of agricultural and enterprise innovation don't require large amounts of money, but rather interest and the willingness to try new things out on a small and well-planned scale, and to problem solve around technology adaptation. Aiming one's services to fill the gaps in the local economy is also necessary. All the things required for a more balanced, more modern economy may not be under the same project umbrella. (They are not in the Zio region.) But an agency has to seek alliances that will make a complete system work at least on a rudimentary scale.

4. Building a Sustainable Institution Agricultural and economic modernization are a long term process requiring institutions that have a long term commitment to promote them. Toward this end it is not too early for APP/Togo to think how it is going to sustain itself financially. Part of the answer comes from establishing methods and systems that will result in successful projects and a high rate of loan recovery. Another part comes from becoming more efficient and holding down the cost of services. Even assuming the maintenance of good relations with USAID and other donors, however, APP/Togo faces the challenge of building up financial self-reliance. How can the subsidy of foreign aid be spent to create a capacity for self-financing? APP fortunately exists in a legal and policy context in Togo where this is possible. The change of its parent institution from Partnership for Productivity to CARE will also affect the design with which APP develops income generating mechanisms, or whether it does so at all. CARE does not have a precedent like this in its other projects, either in terms of earning local revenues or becoming an indpendent local institution. There are, however, good programatic reasons for APP to develop its own agri-support businesses to provide some of the services needed by local producers. If APP is going to aim high in terms of program impact, it should also aim high to provide a model in terms of an on-going local institution.

III. Evaluation Methodology

The mid-term evaluation exercise had four learning objectives. One was to make improvements in the design and execution of the Zio River project for the remaining two and a half years of this contract and several more to come. A second objective was to create an appreciation among project staff of the policy significance of what they are doing to form institutions that can promote African rural economic development and food crop agriculture. And the third objective was to increase understanding among donor and other rural development institutions with which APP collaborates as to what is *productivity technology* and the strengths and weaknesses of implementing it thusfar in the Zio River region. The fourth objective was to measure progress toward rural productivity and make a qualitative and quantitative analysis of program services and their effects.

The evaluation itself consisted of four studies prepared during the months of October--December, 1986. These were: a critique of the field program; a socio-economic impact survey among clients and other producers in the region; a financial audit; and a study about APP businesses that could support Zio producers and generate program revenue. The findings of these were presented in two evaluation workshops. The first, on November 21-22, was for the APP staff, and was also attended by representatives of USAID. Detailed critiques were presented and discussed about the systems for credit and farmer training, agricultural testing and demonstration, group formation and rural enterprise development. The second workshop, on December 9-10, included representatives of eight rural development institutions to discuss rural productivity technology and how agencies could collaborate to improve it. Present were representatives from APP, the Ministry of Rural Development, the Ministry of Plan, the Agricultural Research Division of the Ministry of Agriculture, the Togolese Federation of Credit and Savings Cooperatives, the International Institute for Tropical Agriculture, the Zio Rice Growing Center, and the University of Benin. At this second workshop issues about combining producer training with credit and business development, costs of a systems approach, and cost-effectiveness were discussed. Also present from Dec. 16-21, 1986 were Paul Liphold, a USAID agronomist from the International Institute for Tropical Agriculture in Ibadan, Nigeria; Dan Jenkins, an irrigation engineer with USAID/REDSO/WCA, and Henderson Patrick, an evaluation specialist also with REDSO. These three officials reviewed field progress, spoke with project managers and with USAID/Togo Mission Director Myron Golden and Rural Development Officer Sidney Bliss. Section I presented the conclusions and recommendations from the two workshops plus discussions with the AID/REDSO team.

The evaluation was designed and the process led by Dr. Cheryl Lassen who served as director of evaluation and research of Partnership for Productivity/International during this period.

Defining a "Green Revolution," Africa Style

A larger question of institutional development framed the mid-term evaluation exercise. As with many donor and private voluntary organizations working in the region, Partnership for Productivity was conscious of the problems with drought, famine and debt that have beset African nations in the 1980s. According to World Bank figures, grain production in 24 Sub-Saharan African countries most affected by drought, fell from 150 kilos per capita in the 1970s to below 100 in 1984. In other regions of the Third World per capita food production was rising during this time. In terms of an index with 1970 as the base year, in both Asia and Latin America food production rose from 100 to 115, while in Africa it fell from 100 to 80. 1/ Declining food production cannot be blamed just on bad weather, however. In 1983-4, five Sahelian countries (Burkina Faso, Mali, Niger, Senegal and Chad) harvested a record 154 million tons of cotton at the same time they were importing an equally record-breaking 177 million tons of cereals. 2/ The fact that cotton could be grown and grain could not has to do with the availability of technology, credit, inputs, marketing systems and technical assistance that exist for industrial crops and generally do not exist for food crops.

Awareness of the paucity of examples of successful institutional approaches to modernizing food crop agriculture motivated PfP and APP to scrutinize this "rural productivity technology" being employed in the Zio River region to analyze how much it worked, and where it needed to work better.

The larger framing question for the evaluation was, "What is a 'Green Revolution' Africa-style? What is the process for taking proven innovations from controlled environments and adapting them for practice among farmers with low levels of technology and in a local economic context not well-equipped to support a modern agriculture? What kinds of changes occur in producers' worldviews and skills that allow them to convert from subsistence to surplus; from extensive to intensive cultivation; from small, unconnected plots to farm management; and from little organization of one's economic thoughts to planning, money managing and on-time, precise execution? And what are institutional approaches and methods that work to assist farmers to make this transition successfully? Probably the keys to Africa's Green Revolution are as much techniques to solve problems, fill gaps and manage resources as they are improved genetic materials and machine technologies. The importance of the Zio River project and systems approach models like it is that they help fill our knowledge base about details of methods and sequences to transform low level technologies and local economic institutions surrounding underdeveloped food crop production. And even though it is in an early stage of development, there is measurement of results and effects of these methods and program approach which can be analyzed and compared.

1/ Lloyd Timberlake, *Africa in Crisis*, London: Earthscan Press, 1985, p71.

2/ Ibid., p. 19

IV. Obtaining Project Objectives: Accomplishments and Weaknesses

Four objectives were set to achieve the project purpose of higher levels of economic, human and institutional development through increased productivity in the Zio River region. What follows is a program "balance sheet" that presents a detailed discussion of the methodologies and the strengths and weaknesses of what has been accomplished toward these objectives in the first two and a half years of implementation.

Objective 1: To strengthen and develop local farmer producer organizations that will make production more efficient, give producers greater control over the purchase of inputs and marketing, work collaboratively with other public and private sector institutions and provide members with the opportunity to develop group management skills.

In order for African farm families to achieve noteworthy gains in agriculture and standards of living, there must be an evolution away from the traditional, isolated two hectare family farm. Modernization occurs when small farmers pool their labor, store, transport and sell their produce in common and save and manage their surplus together. The creation of groups for these purposes is, however, a longterm process. A hypothesis of the Zio project is that many efforts at rural economic group promotion fail because too much emphasis is placed on organizing people collectively and not enough on other conditions and factors that make producer groups flourish.

These conditions include applied agricultural research that tests and adapts improved technical packages that farmers can use to produce significant surpluses, a training system that effectively transfers innovations to farmers, and a network of essential support services like credit, input supply and marketing. In addition, APP/Togo hypothesized that one needs a practical group formation methodology that recognizes that groups can take many forms and are only a means to an end. That is, groups are appropriate insofar as they confer advantages on their individual members.

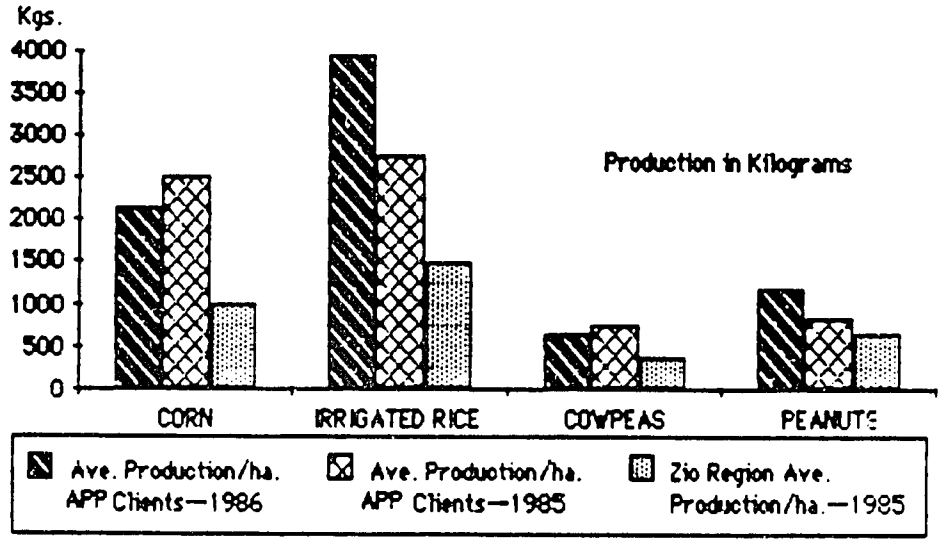
In this context, APP/Togo spent the first year of field activities--1985--establishing the necessary conditions and outlining a group promotion methodology. 1986 involved the application of that approach.

Accomplishments

1. Technical Packages that Raise Yields Substantially With the support of other agricultural technical services, APP/Togo developed technical packages for the major crops grown in the Zio River region as well as for small ruminants and poultry layers. Most attention has focused on four crops: corn, cowpeas, peanuts and irrigated rice. Passed on through a farmer training system, these packages have resulted in yield increases of two to four times over traditional yields during three different agricultural seasons. For example, the average production of peanuts in the Maritime Region is 400 kg/ha, and the 1986 average yield

among APP/Togo producers was 1100 kg/ha. The average yield for irrigated rice is 1500 kg/ha, and yields among producers assisted by APP/Togo averaged 3700 kg/ha in 1986. These are not miracle figures, but they do represent producers with yields substantially above the local average, as the graph below shows.

Graph 4.1 Comparative Yields in the Zio Region, 1985-1986



2. A Farmer Training System that Works APP/Togo established a high quality farmer training system managed from two field offices. The system focuses on teaching farmers improved production and farm management practices as well as understanding their importance. Training consists of structured group activities as well as individual monitoring and follow-up. Through October 1986 APP/Togo field agents had worked with 399 farm clients on the following subjects:

-- agricultural technical packages
-- observance of the agricultural calendar
-- planning a year's farm operations
-- crop diversification and orientation towards higher value food crops
-- soil conservation and water management practices
-- calculating the profitability of farm operations

An analysis of the implementation of the agricultural technical packages during the first 1986 season showed that 90% of the practices presented were correctly executed. A socio-economic survey comparing APP-trained farmers with other local producers also showed the level of practices of the farmer to be significantly above the regional average.

The training is both intense and in its present form relatively costly. Nevertheless the field agent/farmer ratio improved from 1/10 to 1/22 between the 1985 and 1986 long agricultural seasons. Up to now, training is only given to producers who have a production loan. To reduce cost and increase the diffusion rate of agricultural modernization, in 1987

APP/Togo will begin demonstrating much more widely technical innovations which can be adopted by farmers at little or no cost to increase productivity. There will be an additional track of agricultural innovation demonstrated on a village level but without on-farm follow up. Project staff plan to monitor it to see what impact it has for enterprise and skill development and for unforeseen effects.

3. Applied Agronomic Research Closely Integrated with Farmer Needs and Preferences APP/Togo has established an applied agronomic research arm which is closely tied to the farmer training system. Its purpose is to test ideas and techniques that improve the quality of information and training given to farmers as well as demonstrate their value. Accomplishments include:

-- Tests of 83 varieties of corn, rice, cowpeas, peanuts, cassava and sweet potatoes, including a promising short cycle variety for corn that yielded 10 times the regional average and several varieties for cowpeas that reduce substantially farmers' risk during the second short growing season.

-- Demonstration of the feasibility and profitability of growing cowpeas. This has become the second most important rainfed crop for PfP-assisted farmers and a good source of cash income. Average yield of APP-assisted farmers is 672 kg/ha compared with 150 kg/ha regional average.

-- Identification of improved fertilizer doses and pesticide treatment for corn, rice and peanuts that resulted in improved technical packages. Peanut yields on station are 2100kg/ha, which is 5 times higher than the regional average.

-- Demonstration of the effectiveness of mulching as a soil moisture retention measure. As a result, no APP/Togo clients during the 1986 second agricultural season burned their first season crop residue.

-- Demonstration of alley cropping with leucaena and other fast growing tree varieties which provide firewood, fodder, and material to conserve moisture. Deep roots also recycle subsoil nutrients to topsoils and reduce the need for fertilizer, the price of which is rising in Togo.

-- Testing the effectiveness of a fumigable warehouse for grain which will allow producer to conserve cash crops and sell them 5-6 months after harvest when the price is several times higher.

-- Demonstration of parboiling of paddyrice which results in increased quantities of white rice (5-10%)after milling, makes it less susceptible to insect attack, and increases its volume, which is a marketing advantage in Togo where rice is sold by volume rather than weight.

4. Support Services for a More Modern Agriculture Established. The Zio River region lacks basic farmer support services in agricultural input supply, credit, food crop marketing and machinery

rental. APP/Togo found it necessary to set up elementary systems in each of these areas. Input supply for clients and other producers is assured out of two warehouses put at the project's disposal by the Maritime Region DRDR. A credit training fund, to be described in greater detail below, allows farmers access to inputs and some cash for day labor so that they can put into practice the lessons learned in training. To make it easier for farmers to reimburse their loans, APP/Togo accepts repayments in kind which constitutes the beginnings of a food crop collection and marketing system. A small rototiller service has been set up for clients growing irrigated rice to enable them to prepare their fields on time.

5. **Group Formation Methodology for Rainfed and Irrigated Agriculture** As it initiated the systems and services described above, APP/Togo worked mainly with individual producers. But at the same time, a group promotion approach and methodology was devised that allowed the project to emphasize group activities during the second year. APP/Togo is currently working with three types of producer groups whose members totaled 44% of all agricultural clients in the 1986 long agricultural season.

   -- Agricultural production groups which were formed in the 1970's by other rural development projects; APP/Togo works with three of this type group with a total membership of 63.

   -- Associations of farmers organized around a "model client" which uses successful producers as the trainers and organizers of others with the intention that the association will evolve into a formal group. In 1986 APP/Togo worked with four of these associations totalling 20 farmers.

   -- Water user groups working in the Zio River irrigated Perimeter who depend on a single canal and who must work cooperatively to manage water and insure the maintenance of the irrigation infrastructure. APP/Togo worked with 14 of these farmers organized into group in the Assomé section of the perimeter in 1986. This group is increasing in size to 38 and two others are being formed in other parts of the perimeter in 1987.

In addition to these more formal structures, PfP's farmer training system requires that individual farmers assemble for periodic group training or demonstration sessions. Indications are that some of these training groups will evolve into more formal producer organizations.

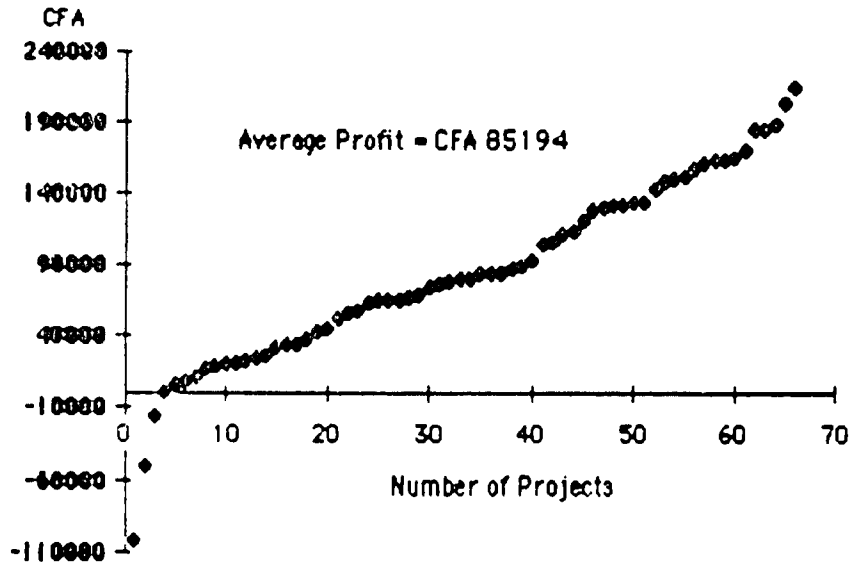
Improvements and corrections

1. There is still a lot of room to increase yields with minimal increases in cost, so continued emphasis must be placed on improvements to the technical packages. Adaptation and introduction of things like crop associations, rotation, and short season varieties will continue. A technical package will be prepared for cassava, a major crop in the region that has beneficial association with cowpeas. More effort will be placed on improving and applying the packages for red pepper and okra, two high value crops, as well as introducing other cash crops. APP/Togo already has

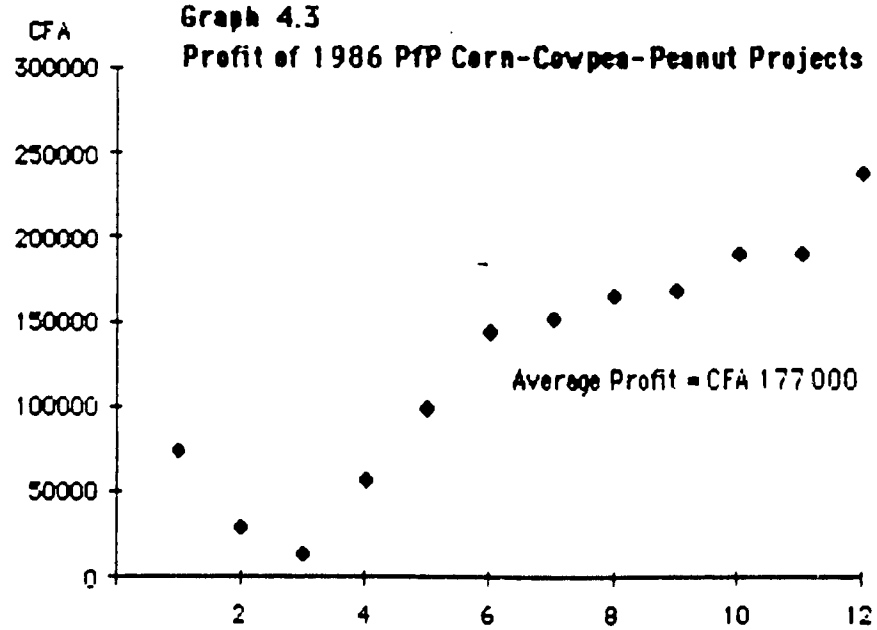
technical packages for small ruminants and layers. It will introduce them in 1987 and develop technical assistance to animal raisers. APP staff will receive increased training in how to apply these new techniques as they become adapted for local use.

More attention will also be paid to studying the agricultural economic value of different crop associations. As graphs 4.2 and 4.3 illustrate, some crop mixes are of a much higher economic value than others. More comparative evidence needs to be developed and shared with farmers and other rural development agencies about the profitability of different associations.

Graph 4.2 Profit of the 1986 APP Corn-Cowpea Projects



Graph 4.3
Profit of 1986 PfP Corn-Cowpea-Peanut Projects



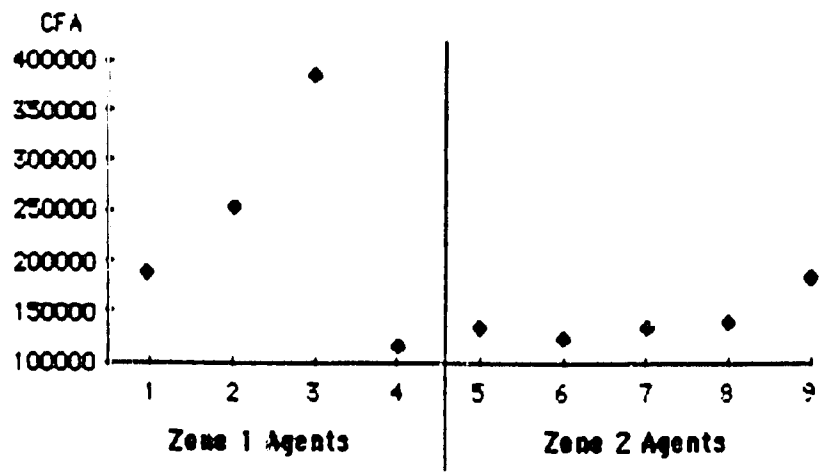
Applied agronomic research will also concentrate on defining and demonstrating innovations to area farmers that they can make for little or no cost to increase productivity and that do not depend on credit and repeated on-farm technical assistance.

2. APP/Togo must also improve the cost efficiency of its productivity training system while maintaining its effectiveness. In the first two years clients consisted of only those who have received this package of services (credit-TA-inputs). A number of them received intensive levels of assistance in order to establish a successful lending/small enterprise development mechanism. Several things can increase service delivery efficiency, including:

-- weaning older clients away from intensive levels of service
-- attaching new clients to model producers within the APP system
-- increasing the amount of group training
-- doing more group training and demonstration than individual on-farm visits
-- establishing a fee system for the training whereby farmers learn there is a cost for visits and agents learn to bring service delivery more in line with what clients will pay for
-- increasing the number of clients per field agent
-- doing a program of village demonstrations of agricultural innovation where producers who might not as yet be good candidates for a loan and more intensive assistance from APP/Togo can still learn improved techniques and be exposed to attitudes and practices that will increase their productivity
-- have farmers do their own village demonstrations so they get the maximum benefit of a "see and do" training methodology

In terms of increasing the productivity of APP staff, further effort should be made in 1987 to show staff comparative quantitative indicators of their productivity, like the one below. APP has the capacity to show this by analyzing project evaluations and loan status by field agent.

Graph 4.4 Average Project Value by APP Field Agent, 1986



3. The input supply service will expand in 1987 to include sale of improved seed, fertilizer and tools to non-client farmers. A recent Togolese government decision to allow sellers of fertilizer to recover transport costs and earn a small profit may turn this into a activity that can pay for itself.

4. APP lending will grow as the number of clients expands. Medium term loans will be made to farmers who have mastered basic production techniques for the purchase of tools, equipment and machinery. APP/Togo will work to develop other mechanisms to get credit out to rural producers including transfering its rural productivity technology through FUCEC to local savings and credit cooperatives and channeling selected clients into the CNCA system.

5. APP/Togo will formalize marketing services to provide for a more efficient collection of in-kind loan repayments and store, manage and sell what has been collected. The service will coordinate with the farmer training and credit training systems to train groups to store, manage and sell their own surpluses.

6. APP's rototiller service will change orientation from providing a plowing service to training groups of farmers to operate and maintain their own machines and to providing repair and spare parts support. This will be done gradually in accordance with local management capability.

7. The group promotion effort for rainfed farmers will be directed more towards associations formed around "model clients" , and the strategy in the irrigated perimeter will be based on the formation of water user groups. Groups which have mastered basic production techniques will receive more training in farm management and marketing. FUCEC will provide assistance in building a savings function into groups.

Objective 2: To strengthen local agricultural institutions, primarily through training and collaborative relationships with the project, so that Zio River producers may make better use of their agricultural resources.

As the Zio River project was being designed, the team observed that there were many good but underutilized technical resources which could be provided by public sector agricultural institutions. It was thought that the project would be a vehicle for these agencies to make services more available, and that APP/Togo could concentrate primarily on credit and management training and complement government agricultural extension service. As it turned out, both APP/Togo and its clients have benefited greatly from public sector resources and services and APP/Togo has worked jointly with several public institutions, as well as private voluntary organizations (PVOs). But the idea of APP/Togo field agents working hand in hand with public sector extensionists has not proven realistic so far. The approaches to increasing rural productivity of APP/Togo and public sector agencies (DRDR and CRZ) are too different, as are levels of training, motivation and support. Government and PVO agricultural development agencies working in the Maritime Region want to collaborate. However, meshing their approaches and resources is technically and organizationally complex, as well as politically delicate.

To implement the project, APP/Togo has had to establish a multi-purpose producer training system dealing with production as well as credit, management and marketing. Now APP/Togo has arrived at a stage where an economically successful alternative to prevailing agricultural development approaches is emerging, both at the level of the farmer and the service agency. APP/Togo can show average levels of production, profit, input expenses and training levels for this alternative. And the alternative is growing (and has much potential to grow) in profitability: yields in farmers' fields average only 25--40% of what the APP/Togo agronomist gets in on-station tests. As value-adding improvements are made in storage, processing and other practices to reduce post-harvest loss, farmer profit will rise considerably. It is appropriate at this point to have a dialogue with other agricultural development agencies, as well as expanded relationships which test and adapt the effective aspects of both the public and private sector approaches. This is an unusual undertaking in Togo where, although the two sectors work along side and contribute services to one another, there is no joint programming that creates and adapts institutional hybrids.

A difference between APP rural development agencies is that APP combines credit and farmer training. Its methods geared to insuring that the projects undertaken with credit are feasibly designed and executed so that the loan can be repaid. PfP's systems are very selective about who becomes a client; they analyze and are concerned with profitability; they monitor performance closely; and they fill the gap of supporting services (inputs, marketing,etc.). Other agencies working either with finance or training give a narrower service more extensively to a larger number of producers. Issues of difference between the public and PVO approaches include numbers served, but also the economic and modernizing impact of the service.

The accomplishments cited below center around the ways in which APP/Togo has worked with its rural development partners.

Accomplishments

1. International Institute for Tropical Agriculture (IITA): APP/Togo has had a close and successful working relationship with the IITA, which has supplied it with plant varieties to test, several prototypes of labor-saving machines, and technical assistance in adapting these for local use.

2. Direction Régionale de Développement Rurale (DRDR): Relations with the Maritime Region DRDR have been good because the Zio project coordinator has always been the DRDR director for this region. In this capacity he has taken an interest in the project and contacts are frequent. A major material contribution of the DRDR to the project has been two 250 ton warehouses put at PfP's disposal for agricultural input supply which have been an indispensable part of PfP's services to farmers. APP/Togo also purchases most of its fertilizer through the DRDR.

At the field level APP/Togo agents routinely refer farmers to DRDR extension agents to acquire information on improved agricultural practices. DRDR agents also refer farmers to APP/Togo for credit assistance.

Recently APP/Togo and the DRDR defined a plan of joint collaborations for 1987 where the two will test in limited ways the best aspects of each others' approach and methods. Afterwards, both agencies will analyze the results (benefits, impact), costs and lessons learned.

3. Centre Rizicole du Zio (CRZ): CRZ has been PfP's closest field level collaborator. It assisted APP/Togo in drawing up its irrigated perimeter development strategy based on water user groups, and assisted in the topographical analysis of the Assomé section to define maintenance and repair needs. CRZ personnel are good sources of information on local farmers and help resolve disputes over land and water rights. Two CRZ agents, sponsored by APP/Togo, participated in an irrigated rice training course at the IITA in Ibadan, Nigeria.

4. National Plant Protection Service: The plant protection service is PfP's main source of supply and advice on pesticides and their application. In addition, they have financed the construction of two 25 ton fumigable grain warehouses that APP/Togo is testing for use by producer groups.

5. Recherche Agronomique: APP/Togo has tested seed varieties provided by the agricultural research service. Research agronomists accompany the APP/Togo agronomist to clients fields.

6. Agricultural Statistics Service (DESA): APP/Togo has contracted with DESA to provide monthly price data on the principle crops in the project region. DESA field agents play an important role in the project's monitoring and evaluation system by measuring each agricultural client's crop yields. DESA lent APP/Togo one of its high level technicians to serve as co-director of PfP's 1986 socio-economic survey. DESA personnel have also participated in the training of APP/Togo field agents.

7. National Soils Laboratory: The soils laboratory has done soil testing for both farmer clients and the applied agronomic research arm of the project.

8. The Sotouboua Seed Farm and SOTOCO: The two organizations are the sources of high quality maize and cowpea seed that APP/Togo sells to its clients.

9. The Federation of Savings and Credit Cooperatives (FUCEC): APP/Togo has recently signed a memorandum of understanding with FUCEC that will cover field activities in 1987. APP/Togo will be providing training to members of local savings and credit cooperatives (COOPEC's) in its rural productivity technology. It will also give training and follow-up for a fee to members who obtain COOPEC loans for agricultural production. FUCEC personnel will work with APP/Togo field agents to create COOPEC's within successful PfP-assisted producer groups.

10. Peace Corps: APP/Togo has benefited from the services of a fourth year Peace Corps volunteer who plans and supervises the group promotion and training effort. The project works as well with another volunteer who is promoting fuel efficient wood burning stoves among rice growers who wish to parboil their paddy rice.

Improvements and corrections

1. APP/Togo intends to undertake wider and more comprehensive collaboration where it meshes the strengths of other public sector and PVO agencies to correct weaker aspects of its own approach that will make it more effective and cost efficient. An example would be FUSEC's methods to form savings and credit cooperatives and to pass on the cost of training to beneficieries. APP/Togo is also going to accept seriously the challenge given to it by the DRDR Director of the Maritime Region (the Togolese government coordinator of the Zio Project) to define low or no-cost packages and less intensive methods of disseminating agricultural innovation for farmers who do not receive credit. APP/Togo can benefit greatly by having both intensive and extensive forms of technical assistance and support service delivery. The existence of extensive forms of training farmers will produce candidates that better qualify for the intensive forms of service.

2. APP/Togo also intends to be proactive in sharing its "rural productivity technlogy" with other rural and agricultural development institutions in Togo which combine farmer training systems with credit, management and small business development. Sharing approaches and methods, however, requires skills for communicating with other institutions. It is one kind of talent to talk and work with farmers, and another to talk and work with policy makers. During the course of the mid-term evaluation, a round-table was held on rural productivity technology to which APP invited several other collaborating institutions. All who came agreed that they learned more about the strengths and weaknesses of themselves and the other agencies by their participation in this exercise. Togo's rural development agencies need to organize more of these sessions to share methods and program issues.

3. Another possible avenue of collaboration is in the area of monitoring and evaluation. Few rural development agencies have good performance monitoring systems to know what effect they are having on agricultural and economic development. APP/Togo is one of the agencies that has methods and systems to collect and analyze evidence of socio-economic *benefits* as well as the quantities of services delivered. At the moment these systems are overly complex and need to be reduced. But there should be a good institutional market for performance monitoring systems.

Objective 3: To institutionalize credit education, management and business development training and adult problem solving education as resources that will enable regional producers to develop a wide range of small scale agricultural and agriculturally-related economic activities.

APP's contention from the beginning of the project has been that Zio River producers do not suffer so much from a lack of resources, as a lack of knowledge of how to manage them well. It has, consequently, based its rural productivity methodology on a combination of technical assistance, management training and education in the use of credit. This approach is unique, and sets APP/Togo apart from other rural development institutions. Credit education and management training are the subjects of this section.

Accomplishments

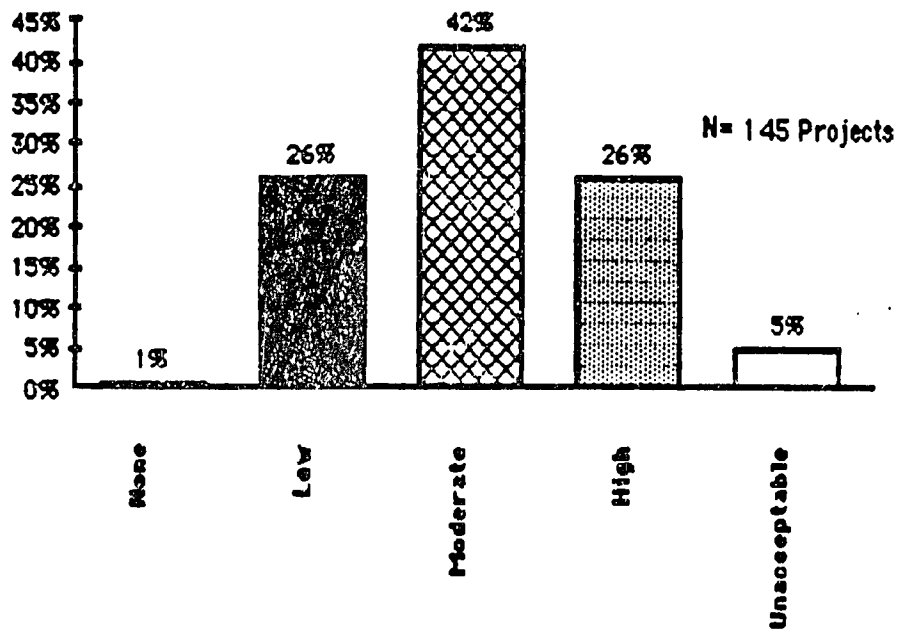
1. Establishment of a Credit Education and Small Enterprise Development Training System APP's system has six stages and the well defined procedures that constitute each. This approach has the following characteristics:

-- rather than giving loans in response to demand and collateral, APP/Togo assists its clients in the design and execution of feasible small scale economic projects and makes loans as a function of the client's ability to manage resources
-- the system stresses the productive use of resources: productivity and profitability vs. simple production
-- emphasis is placed on the proper use of credit and how to behave towards a credit institution; borrowers are monitored so that they use their loans for the purposes for which the money was borrowed; they must repay according to the terms of the contract they sign
-- training is provided in recordkeeping and the calculation of profitability
-- borrowers are made aware of the increased risks they are incurring; they are also shown how innovation and the adoption of new techniques can help them manage those risks

2. Lending and Educational Effectiveness Relative to the Inexperienced, High Risk Population Being Served Through the end of October 1986 APP/Togo had lent 22,823,185 CFA among 422 clients. Very few of these borrowers had prior experience with productive credit, nor had many ever dealt with a formal credit institution. With this high risk clientele, five percent of the amount lent has been written off. Another ten percent is delinquent.

APP rates the risk of the clients with whom it deals. In 1986 it considered only 1% of those with whom it dealt with to be of such superior quality that little risk was involved. That very sobering fact should be taken into account by those who would urge much reduced effort and vigilence in the development of this credit system. On the other hand, APP has had to cut off further project services from only 5% of the producers with whom it works. Graph 5.5 is a breakdown of the risk assessment of APP's 1986 portfolio during the Long Season. Those in the "high risk" category were placed there because of attitudes or traditional behavior that prevented the producer from following technical assistance.

Graph 4.5 Risk Assessment of the 1986 APP Portfolio of Agricultural Projects/Producers



A cautionary note should be added. The data above is how APP, a non-profit institution with the goal of human and small enterprise development, rates the producers with whom it works. APP's assessments are based primarily on a producer's character, experience and outlook and not on conventionally accepted banking collateral such as land titles, pensions and salaried employment. Few farmers would qualify for loans under conventional banking practices, which is a strong argument in favor of alternative institutions such as APP, FUSEC who have a close enough relationship with borrowers to judge them by these other criteria.

3. Successful Initial Definition of Agricultural Credit and Other Complementary Systems Within its credit training system, APP/Togo has made much progress in establishing effective credit procedures for rainfed agricultural production, a high risk area for lenders. APP/Togo considers rainfed agriculture the priority sector because it represents the economic activity that occupies nearly the entire population. Consequently, nearly 60 percent of PfP's loans have been made in this sector. On-time reimbursement is a challenge, both because of borowers' lack of experience with a formal credit system referred to above, and for technical or structural reasons: insufficient or erratic rainfall, farmers' imperfect application of the technical packages and unimproved storage and an undeveloped marketing system for food crops that make it difficult for farmers to obtain the full value of their production.

One project response to these constraints has been to establish an intensive training and follow-up system to insure that the technical packages are correctly applied. Healthy plants and diversified crop mixes are better able to withstand drought and spread risk for rainfed farmers.

Another measure APP/Togo has taken to facilitate repayment is to orient farmers towards higher value crops like cowpeas, peanuts and pepper, and to accept reimbursements in kind. These cash crops plus the in-kind

reimbursement system make repayment possible and efficient for small farmers.

4. Conservation and Marketing One solution to the marketing problem mentioned above is to assist farmers to organize to pool their agricultural surplus in order to store and market it together. An improved, fumigable storage facility has been constructed that can store 25 tons. Local farmer groups are looking at the construction and costs of this and seeing it as a possibility within their own means. In addition, other low or no-cost technologies have been introduced to conserve and process agricultural commodities such as post-harvest treatment of cowpeas and par-boiling of rice.

5. Developing Rural Non-Farm Enterprise Because of the emphasis on agricultural projects, APP's involvement in the development of other types of rural enterprise was minor in the first half of the project: 22 clients who received only 8 percent of the loans made. The projects involve small scale commerce, food processing and artisan activities. Training consisted of learning to prepare simple business plans that allow clients to maintain their working capital while repaying their loans. Field agents monitored the execution of these plans with bi-weekly or monthly visits during which they and the clients prepared balance sheets.

The rural enterprise sector presents the fewest problems for loan repayments. Of the total lent only 7 percent was delinquent at the end of October 1986 and no loans had been written off.

In 1985-86, projects were done because of the initiative of producers to come to APP and request assistance, but without a clear strategy on the part of the project to promote non-farm economic activity. But this is rapidly changing. APP's intention is to give technical as well as financial and management assistance to develop agri-support enterprises. An example is mills: APP has developed a technical package for the operation and preventative maintenance of milling machinery which will be introduced in 1987. Feasability studies of gari-making (cassava) and oil-pressing (palm, peanut) are planned to see how very small, very traditional processors could benefit from technical assistance. A specialist in appropriate technology and small machinery, Mr. James Winter, has been hired and will head this rural enterprise component. A certain size and level of technical and enterprise complexity is necessary for some of these agri-support enterprises. In cases such as milling and packaging, these must become more formal, differentiated small businesses. With food processing and preparation, which is a major source of income and employment for women small producers, a strategy must include organizational as well as technical assistance. And in the case of small commerce, APP needs to have alternative financing and credit education mechanisms to how it currently gives loans and credit education.

Care must be taken with what this non-farm enterprise development strategy emphasises because, in addition to implications for local economic modernization, it also has significant social and income distribution consequences. APP must develop larger formal enterprises to fill farmer needs for input, repair, processing and marketing services. But if APP concentrates only on this, it overlooks the principal sources of economic opportunity for women small producers who, because of land tenure, are in the processing and commerce sectors.

6. A Monitoring and Evaluation System for Small Enterprise Development and Program Performance APP/Togo has developed a monitoring and evaluation system that measures the economic performance of client projects and socio-economic benefits derived and a management information system that tracks several major indicators of project performance such as volume of service delivery, credit fund activity, and revenue generating capacity. Many aspects of these monitoring and project management information systems need to be refined, but recently the Zio River project was recognized in a management audit of USAID/Togo as one of the two projects in the Mission's portfolio that had the means to monitor outputs and impact. In debates about what does and does not work for rural development, APP is adding a new dimension to public policy analysis in Togo by collecting and analyzing evidence about performance and benefits. Two other local institutions have approached APP/Togo to share its monitoring systems with them.

APP/Togo has a project evaluation system which gives quantitative information about each project's results when it is completed. It has a management information system which gives monthly accounts of project services and outputs. APP/Togo performs an annual socio-economic survey that measures income and economic behavior throughout the project area. In 1986, 380 household economies were surveyed, although this will be slimmed down in the future. All of these now exist on a computerized data base and for this evaluation data from them was processed at the project site. Project financial accounts are being computerized as well and it is anticipated that both the financial administrative and the programatic data bases will be used for integrated project management analysis in the future. The learning, information and data processing systems of APP/Togo and local staff ability to use them are far from perfect, but they are unusually advanced for most small enterprise projects, especially in Africa. They enable APP to generate technology about African rural economic development that is significantly different than most foreign aid or university research projects.

Improvements and corrections

1. To date, APP/Togo has focused its agricultural training much more on agronomic production techniques than on management. Future training for those who master production techniques will center more on planning and the management of a surplus (storage, marketing, calculating profitability, savings, reinvestment). New sessions on these subjects will be prepared and field agents will undergo additional training to make them as skilled in these areas as in production.

2. While the reimbursement situation is satisfactory overall, recovering loans is an enormously difficult task which requires inordinate amounts of staff time. A good part of the problem lies in the fact that the people to whom APP/Togo lends are not used to a strict repayment system based around a contract. Exposure to this system over time does, however, change behavior in a positive way. As stated in the accomplishments section above, APP/Togo staff have noticed an improvement in repayment behavior between the first and second years of the project. Further improvements will occur through increased exposure to the system.

APP/Togo will do other things as well:

-- assist farmers to improve their storage and marketing techniques to enable them to sell in larger quantity and at a higher price
-- review the profitability of short term agricultural loans in view of reducing amounts lent for day laborers
-- analyze further the patterns among good and problem loans
-- investigate the impact on repayment of such phenomena as structural indebtedness, family claims upon surplus and pent-up consumer demand
-- increase surveillance of field agents to make sure that problems being experienced by clients are identified and solved before they have an adverse effect upon loan repayment
-- through training of all field staff in effective loan correction and recollection measures

3. The key to the management of surplus is a good marketing system. Consequently, APP/Togo will formalize its marketing activities by putting its agricultural economist and Peace Corps training specialist in charge of a marketing unit whose task it will be to develop marketing outlets and train groups of clients to gain more control and obtain higher revenues from the selling of their produce.

4. The rural enterprise sector is important for two reasons. First, it is essential to the regional economy because its activities furnish support services like processing and marketing that farmers need. Second, it employs large numbers of women whose economic specialities are selling and food making and with whom the project wishes to work. As part of this evaluation, APP/Togo has developed a rural enterprise strategy which it will use to build a more important non-agricultural clientele. Responsibility for implementation will lie with the project mechanic trainer, the two zone chiefs and two specially trained field agents. Their approach will be systematic and will consist of developing rural enterprise technical packages, performing feasibility studies of types of activities and designing and implementing management training sessions.

The project will start by working with individual entrepreneurs. More thinking needs to be done on the appropriate forms of economic organization and credit mechanisms that will allow rural enterprise clients to form groups.

5. Parts of the monitoring and evaluation system need to be reduced and simplified. The annual socio-economic survey collects too much data, often in forms that are too disaggregated to be processed effectively. The project evaluation instrument needs to be simplified for agricultural clients, and refined more for different types of non-agricultural clients as the rural enterprise component develops.

Because of needs for the mid-term evaluation, data from the 1986 Zio socio-economic survey was processed locally, immediately after the survey was taken and within the project. There were both rewards and very difficult aspects to doing this. One reward was that project staff got results back fairly quickly, and were able to see aspects of implementation from a different and much more comparative perspective than daily business affairs. This was in addition to having a system that helped account for the impact of the project. It is difficult to do this kind

of analysis on micro-computer hardware and software, however. Particularly, the micro-computer software for socio-economic analysis is not good; financial spreadsheets have to be used which have a lot of limitations. There is one expensive, top-notch program for socio-economic analysis that has ben adapted for use by IBM micro computers called SPSS/PC+. APP/Togo does not have IBM computers in the Zio project and it does not have this software, but USAID/REDSO in Abidjan has this program and the modern computing facilities and technical expertise to use it. Therefore a recommendation is that APP/Togo use REDSO resources to analyze its data and shape its management and project analysis systems.

Within APP/Togo more emphasis needs to be placed on training the local staff to use the financial and socio-economic data bases for implementation analysis and operating the software programs for financial analysis, business graphics, etc. APP/Togo has always stressed that productivity requires an innovative mentality that not only tests things out, but analyzes the results and acts upon the findings. Effectiveness can be increased by showing staff members, especially senior staff, how to apply the project's various information systems and equipment to their own implementation decisions.

Objective 4. To improve the productivity of the Zio River Irrigated Perimeter

The Zio River Irrigated Perimeter is the single greatest agricultural resource in the project region. Its diversionary dam and network of canals allow farmers to overcome the major constraint to agricultural success -- a regular supply of water. Utilized properly, the perimeter could produce two crops of high yield rice and a short season crop of vegetables or cowpeas during every twelve month cycle. In the past, efforts to realize this productive potential have met with varied levels of success, but none has been sustainable.

During the first year of field activities APP/Togo worked in an intensive but uncoordinated way with 26 individual farmers. This was due to two factors: uncertainty over which government service would have authority over the perimeter and confusion over the role of a mission from the Peoples' Republic of China in the perimeter's future development. Both of these issues were resolved during 1985, and in December of that year APP/Togo submitted a proposal for a systematic approach to developing the productive potential of the perimeter to the Minister of Rural Development. The approach, which the ministry accepted, is based on developing a model for a section of producers who depend on a common source of water. Sustainability is based on intensive training in production and management techniques, and conferring maximum responsibility on the farmers for the upkeep and management of their section, something that no other development plan has attempted to do. The plan has been the basis of PfP's perimeter activities throughout 1986.

Accomplishments

1. A Technical Package for Irrigated Rice Production APP/Togo, in collaboration with CRZ, has developed a technical package for irrigated

rice which has resulted in yields between three and four tons per hectare for those farmers who have implemented it correctly. Farmers not using the package seldom produce as much as two tons of paddy rice.

2. A Credit System for Irrigated Rice Producers APP/Togo has assisted 71 irrigated rice farmers and lent a total of 7,110,160 FCFA. Because farmers have timely access to water, productivity has been good and so, in general, have loan reimbursements. The exception was during the second season of 1985 when farmers encountered difficulties in obtaining rototiller service, and when too much money was lent to six young farmers who proved incapable of applying the technical packages correctly. Overall, 10 percent of the irrigated rice loans have been written off. At the end of October 1986, 8 percent of the funds lent were delinquent.

3. Formation of a Water Users Group Throughout 1986 APP/Togo has applied its perimeter development model to a group of 14 farmers in the Assomé section. This is the only example of farmers working in a coordinated way that exists in the perimeter, and many other producers and villages are noticing to it. Group members farm their own fields -- averaging just over a hectare -- but work cooperatively to level paddies and to maintain and repair dikes and drainage systems. Each member pays a user fee that goes into a common fund to pay for materials needed for repairs (previously farmers either waited for CRZ to make repairs or the repairs were not made at all). During peak labor periods like weeding, certain group members pool their labor resources so that the work is done skillfully and on time and so that members save money. The group is also the focal point for all the training provided by the APP/Togo field agent.

While the group is still small and its systems far from perfect, members appreciate the advantages of collective action and have been willing to submit to the discipline that such action requires. They see how water flows better to their fields and yields are higher in comparison with paddies farmed individually. Seventeen additional farmers will join the group in 1987 which will place all 38 hectares in the section under the control of group members.

4. Support Services to Rice Producers One of the biggest obstacles to a coordinated approach has been the lack of an effective plowing service, the result being that farmers begin their season at different times whenever they are able to obtain the services of a rototiller. After experiencing the frustration of having to count on the aged and mechanically unreliable rototillers in operation in the perimeter for its rice clients, APP/Togo purchased eight rototillers which it has organized into a plowing service. Thirty farmers have benefited from the service since July 1986.

By supplying fertilizers and pesticides in a timely fashion, APP's input supply service has permitted farmers to correctly execute the rice technical package. In addition, the service provides ultra-low volume sprayers and non-mechanical threshers (a prototype developed by IITA) to farmers on a rental basis.

5. Improved Post-Harvest Rice Technology APP's applied research arm has begun looking into the post harvest care of rice and has presented the technique of parboiling to the Assomé group. A test demonstration

resulted in parboiled paddy rice attaining a milling rate seven percent higher than the non-parboiled sample. The farmers immediately understood the economic advantages and are to begin parboiling after their next harvest. Before this technique is promoted on a wide scale, more research needs to be done into the marketability of parboiled rice.

Also participating in this effort is a Peace Corps volunteer who promotes fuel efficient wood stoves, a technology which will allow farmers to economize on fuel wood.

Improvements and corrections

1. The single most inhibiting factor to better rice yields is still poor water management. Despite the progress that has been made -- especially in the Assomé section -- APP/Togo and its farmer clients need to improve leveling in paddies and drainage systems. Success in this will depend ultimately on more effective internal group organization.

As the project moves to other sections, there will be need for a perimeter-wide water allocation plan. Outside consultant assistance will be utilized to prepare such a plan and to train CRZ and APP/Togo personnel as well as farmers in its application.

2. Higher yields will also depend on improved agronomic practices: better seed, increased plant density as a result of planting in line and perhaps the use of a hand operated rotary weeder.

3. More productive use of the land could be obtained by planting short season crops during the December-February period when there is little irrigation water available for rice. One possibility that will be tested is a sixty day variety of cowpeas.

4. Labor availability at peak periods in the rice cycle is another important constraint to increased productivity. APP/Togo will prepare a labor calendar that will help farmers plan their irrigated and dryland campaigns in order to avoid labor conflicts. One result of this will be that the irrigated campaign will begin earlier. In group training sessions more emphasis will be placed on the advantages of pooled labor in order to develop this important resource.

5. Farmers in the perimeter will never exercise real mastery over their agriculture without control of rototillers for plowing. In 1987 APP/Togo will begin training farmers in rototiller operation and maintenance with the goal of permitting groups to acquire their own machines on credit. APP/Togo will set up systems to supply spare parts and repairs and will continue to provide a plowing service for farmers who do not own their machines. Before selling rototillers to farmers, APP/Togo must find a more suitable model. The Indian-made Shakti tillers being used at present have not proven durable enough for local conditions.

6. More attention needs to be paid to post harvest issues. There is a serious shortage of threshers in the perimeter which results in losses when harvested paddy lays too long in the fields. APP/Togo must decide whether it wants to promote the IITA thresher exclusively or in combination with the better known pedal variety. Farmers are eager to buy

threshers on credit. Parboiling confers economic advantage through higher milling percentages, but APP/Togo must determine whether parboiled rice will sell in large quantities in the Togolese urban market. At present the milling capacity in the region is inadequate to handle large increases in rice production. As part of its rural enterprise component APP/Togo will work with local millers and entrepreneurs interested in starting new mills in order to increase capacity. It will also study the feasibility of giving producer groups credit to purchase their own mills. APP/Togo might also invest in rice milling equipment in order to process the large quantities of paddy rice that it accepts as in-kind loan payments.

APP/Togo has already begun identifying rice buyers in Lomé and is selling its stock of white rice obtained as reimbursements from clients. As producer groups develop their own production APP/Togo will work with them to develop other marketing contacts.

7. Important increases in production will generate a financial surplus. In order that this surplus contribute to a better standard of living, at least part of it will have to be saved and reinvested. FUCEC has agreed to work with APP/Togo on creating savings and credit cooperatives among producer groups. This campaign will begin early in 1987 in the Assomé and Kovié sections of the perimeter.

8. To date the project has not looked seriously into the health issues connected with working in irrigated agriculture. APP/Togo will consequently obtain the services of a consultant who will identify health problems, and develop health-related training sessions.

V. Evidence of Beneficiary Progress

Introduction and Overview

The purpose of this section is to present evidence about how APP/Togo is meeting the performance benchmarks established at project outset, and to examine the scope and impact of benefits gained through its services. Table 5.1 is a list of these benchmark indicators and progress toward their accomplishment.

To summarize the accomplishments, in two and a half years time services have been established for project clients that are key to modernizing small farmer agriculture based on food production. These include production credit, a system to distribute inputs, and other essestial services such as rototilling. In addition, other key systems have been put into place to adapt improved agricultural technology to the area, to train farmers and non-agricultural producers in the use of improved technologies, and to organize producer/marketing groups. Evidence shows that the performance of these fledgling systems has thusfar been of good quality. Crop yields among farmers assisted by the project have been 2-4 times greater than the regional average. APP actively promoted two high value food crops, cowpeas and peanuts, that are now cultivated intensively by a majority of project farmers. Economic studies indicate an approximate doubling of 1986 annual net agricultural revenue among clients over average earnings among 168 producers surveyed in 1984 at project start-up. A recent comprehensive survey of 383 Zio producers showed significant differences in the use of more modern production and management practices by project beneficiaries than by other local producers. The volume of services delivered is in line with projections and will probably exceed project benchmarks for numbers of clients. The "motor force" of the project, the credit training fund, has exposed most project clients for the first time to the productive use of credit combined with a rigourous insistence on timely repayment. Through the end of October, 1986 CFA 22.8 million had been lent to what must be considered "high risk" clients (no credit history, little or no productive credit experience, no collateral). Of this amount, five percent (5%) has been written off and another ten percent (10%) is classified as delinquent.

The essential project services have been established cautiously and in the first two years have assisted 399 agricultural projects and 22 non-agricultural small businesses. The present challenge facing APP/Togo is to reduce the cost of the services without reducing effectiveness. Some of the costs of services can be expected to decline naturally as innovations spread, marketing services become established, and there is less burden to educate local producers about the proper use of the credit. In 1987 APP will be increasing significantly its demonstrations of innovations to larger numbers of farmers who do not have APP credit and technical assistance, and monitoring whether and how its service costs are falling. From 1985 to 1986 APP became more efficient, increasing the field agent/client ratio from 1/10 to 1/22 and projections for 1987 are 1/35. By year five the goal is to have a ratio of 1/50. Two years time is too short to predict any trend about cost-effectiveness, except to identify the need for this young project to move further in this direction.

TABLE 5.1 ZIO RIVER PROJECT BENCHMARKS AND OUTPUTS

PROGRAM GOALS	Project Accomplishments
1. Improved agricultural and management practices	• 83 new varieties tested for use in Zio region • Promotion of two profitable food crops, cowpeas and peanuts, both cultivated intensively by significant numbers of APP clients • Technical packages disseminated for improved corn, cowpea, peanut and irrigated rice production. Improved technical packages designed and ready for 1987 use for animal husbandry, cassava, and vegetables, and for improved milling and processing of rice and cassava. • Successful introduction of cropping associations, multiple cropping, use of improved inputs, improved cultivation techniques, pest/disease control practices, improved post-harvest storage and processing, farm and labor planning, and farm financial management techniques • Training of client farmers to manage well their relationships with modern institutions giving them access to credit, inputs, storage and other essential agricultural services
2. Increased quantity and quality of agriculturally related activities	• 399 agricultural projects done in first two years • Prototype APP farmer income from long season, 1986 is CFA 267,000— double that of both agricultural and non-agricultural income of rural households surveyed at project start-up in 1984 • Average yields among project farmers 2–4 times above 1985 and 1986 regional averages for corn, irrigated rice, cowpeas and peanuts • Increased intensity and diversity of farming. 98% of project beneficiaries farming 2 or more crops intensively in 1986. • Increased agricultural sales and income. Net agricultural revenue among surveyed project farmers 62% greater in 1986 than other local producers

TABLE 5.1 ZIO RIVER PROJECT BENCHMARKS AND OUTPUTS

3. Creation and promotion of local production-related institutions enhancing access to resources and decision-making	• Establishment of a credit training program that made 422 loans in 1985-86. • Introduction of a storage/marketing system that makes possible in-kind reimbursement which is key to effective recollection of agricultural loans for food crops. Two 25 ton fumigable warehouses built. This system to train producer-marketing groups • Establishment of other essential agricultural services including two warehouses for input distribution, and services for spraying and rototilling. • Formation of 9 economic groups in first two years for production and marketing, and water management. • Organization of the first group to approach rizioulture, water management and maintenance of irrigation infrastructure collectively in the Zio Perimeter since the early 1970s
SERVICE DELIVERY BENCHMARKS	
1. 2000 clients served with loans and/or technical assistance in 5 years	• 108 producers served with credit and technical assistance in 1985, 314 producers served in 1986; 350 projected projects/clients for intensive assistance in 1987 • Modern inputs sold to 250 other farmers in 1986 • 22 non-agricultural clients served in first two years with 95% on-time repayment. A section of APP established in 1986 with field agents trained and dedicated specifically to developing non-agricultural enterprises and specialized technical packages for commerce, processing and artisan manufacturing
2. 500 farmers with improved technical and management skills	• 80% of benchmark target achieved in first two years • Establishment of a "model client" system whereby superior farmers train, organize others, and test/demonstrate innovations within their locales

TABLE 5.1 ZIO RIVER PROJECT BENCHMARKS AND OUTPUTS

3. 20 producer groups with increased group management skills	• Work with 9 groups in first two years, 8 formed in 1986 alone. APP working with 15 groups in 1987. • Orientation of APP approach and methods to emphasize working predominantly with groups • Collaboration with the Togolese Federation of Local Savings Cooperatives to train members and give technical assistance in the productive use of credit. 4 savings cooperatives and +30 members to be assisted in 1987.
4. 75 clients a year receiving training and management assistance Loan recovery rate of 90%	• 270 farmers received training in first two years of service. Agent/client ratio climbed from 1/10 to 1/22 from 1985 to 1986 and is expected to be 1/33 in 1987. • Less intensive forms of service delivery being put into place to demonstrate low- or no-cost agricultural innovations widely throughout the project region beginning in 1987. 24 field days scheduled. • CFA 22.8 million lent to 423 projects in first two years. Average project loan size = CFA 54,000 (US$180) 5% of funds loaned written off, 10% agricultural loans late as of Nov , 1986
INSTITUTIONAL BENCHMARKS	
1. On-going credit program administered by Togolese staff	• Togolese operations manager, accountant and two zone chiefs managing credit-training system.

TABLE 5.1 ZIO RIVER PROJECT BENCHMARKS AND OUTPUTS

2. Collaborative relationship established between producer groups and modern institutions	• APP training and group formation system established for functions such as credit, agricultural labor, marketing
3. Functioning model for agricultural, water management, and maintenance of Zio Perimeter by Year 5. 150 hectares under intense cultivation.	• APP working in 2 sectors (of 12) of the Zio Perimeter at the start of the 1987 long season. • 45 ha. of 600 worked intensively in 1986; 75 ha. to be worked intensively in 1987. • Doubling of irrigated rice yields among APP farmers in 1986 in comparison to other producers in the perimeter. • Introduction on a trial basis of cowpeas grown on residual moisture to enable farmers to utilize perimeter land during the Dec-Mar period when irrigation water is scarce.
4. Trained project agents, farmers	• 16 APP agents promoting rural economic development trained and in the field for the start of the 1987 campaign. Full complement of staff in place. • Systems established for farmers to train, organize others.

The purpose of the Zio River project is to increase productivity through better management of resources among local producers, and to stimulate increased economic, human and institutional development. A paraphrasing would be to transform the traditional, subsistence orientation of producers and to overcome local structural constraints to economic development. All recognize that accomplishing this involves longer term processes, and planning for the Zio Project is being done on a 15 year basis. Nonetheless, the methods and approaches used here for small farmer modernization and local economic development and the details of their effects should be of interest to all concerned with rural development in Africa, even if the evidence is preliminary.

Data Sources for Measuring Program Effectiveness*

Data for the mid-term evaluation about project performance and impact comes from five sources: client files; evaluations of client projects; a yearly socio-economic survey comparing the rural household economies of project beneficiaries with other Zio producers; APP/Togo's project management information system; and special reports prepared by project staff.

APP evaluates the yields, profitability, learning and other effects of every project it does with a producer. It also carries out a yearly socio-economic study to measure the sources of revenue of rural households and how they are spent. The socio-economic survey contains detailed information about production practices and constraints and economic habits as well. A bias of these measurement instruments is that producers know APP is conducting the survey, and they may say things which they think will influence favorably their chances to gain assistance. APP clients tend to underreport production and other farmers tend to overreport it. The survey is very detailed, however, and it is apparent when the internal logic of it is not consistent. In such cases the producer is either resurveyed or the questionaire is thrown out. The economic data of the project evaluations are also accurately measured in terms of sizes of plots, yields and crop values. The quality of the data base on the whole is very good and is spot-checked by APP/Togo's professional staff.

For this mid-term program evaluation, the database consisted of 146 project evaluations from 1986 and 68 project evaluations from 1985. There were also 383 households surveyed in the 1986 socio-economic survey from 33 villages, 56 of whom were present or former APP clients.

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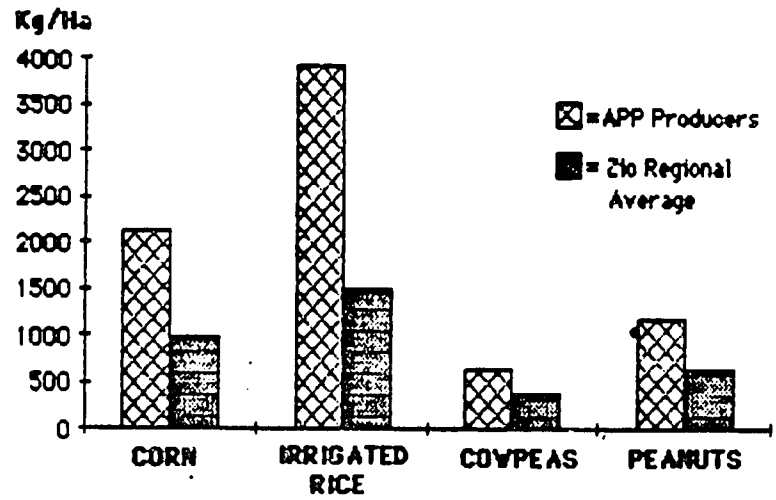
* Many thanks go to Theresa Plonkey who managed the fieldwork of the 1986 socio-economic survey. Her co-manager was Mr. Kagni Mensah of the Togolese Government's Direction des Enquêtes et de la Statistique Agricole. Thresa and Jean Winter converted the results of the questionaires onto a computorized data base. Thresa also helped to process the data and make graphs.

A. Evidence of Socio-Economic Impact

a. Economic Performance

A primary indicator of performance for any agricultural project is productivity increases. Evidence from the first two years shows that APP-assisted farmers have already obtained productivity levels for principal crops 2-4 times greater than the regional average. A principal step in converting from low yield, traditional agriculture and the rural poverty that accompanies it is increasing the surplus produced. This is a step that many producers who have been assisted by APP for two seasons have experienced. They are arriving at a second generation of concerns about how to conserve and manage their surplus, plus acquire the techniques and means that will enable them to produce even more.

Graph 5.1 Yields of Principal Zio Crops, 1986
APP Producers versus Regional Average



In the first agricultural season of 1986, 68% of APP assisted producers obtained corn yields that were higher--almost double--the regional average of .8 tons/hectare. Eighty six percent (86%) of the APP assisted farmers growing irrigated rice had yields above three tons/hectare, which is twice the average yield in the Zio Irrigated Perimeter. Much of this is due to the improved technical package (including pest and disease management), plus the availability of modern inputs and production credit.

Likewise, 60% of APP farmers growing cowpeas obtained at least 800 kilograms/hectare, with the regional average being 450 kg/ha. Talk of averages obscures APP's real accomplishment, which is introducing cowpeas as a cash crop intensively grown by larger numbers of farmers in the region. The 1984 baseline survey at the start of the project showed that only 8% of local producers were able to grow and sell cowpeas. This crop is highly susceptible to insect attack, both in the growing and the post-harvest stage, and there is a general lack of knowledge among

farmers in the region of pest management as well as the inputs to protect against them. APP has taught producers pest management techniques and is also introducing more effective post-harvest storage techniques. In 1986, 75% of the farmers working with APP diversified their production to include the intensive cultivation of cowpeas.

Similar observations can be made for other food crops with good commercial possibilities. For example, only 13% of producers surveyed in 1984 grew peanuts, and the mean value sold by them that year was a miniscule CFA 2,500 (US$8.100). In 1986, 23% of APP producers grew peanuts with the average yield being 1100 kg/ha (worth CFA 132,000). The initial baseline survey showed that only 11% of the producers cultivated and sold tiny amounts of African vegetables such as pepper and gumbo. In 1986 only a small number of APP clients raised vegetables intensively, but they discovered their handsome income potential. This is the kind of alternative agricultural economy APP/Togo is trying to encourage: one with a mix of food crops that are of higher value than maize, plus more intensively cultivated in terms of associated cropping and cropping over two seasons.

Table 5.2 shows the profitability of selected crop mixes among those farmers who participate with APP and other local producers. One sees the tendency for those assisted by the project to have higher average profits and profitability as indicated by the ratio of profits to expenses.

Table 5.2

Comparative Profits for Selected Crop Mixes, 1986

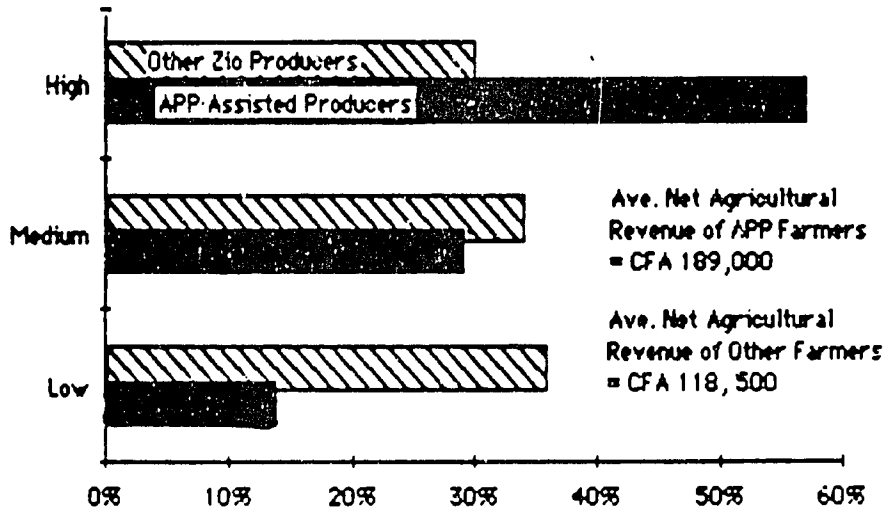
	APP			Others		
Crop Mix	Proj.s	Ave. Profit (000s)	Ratio Profit/ Expense	Proj.s	Ave. Profit (000s)	Ratio Profit/ Expense
Irrigated Rice	4	248	1/2.27	4	206	1/1.68
Corn-cowpeas	66	85	1/1.41	19	70	1/1.21
Corn-peanuts	16	91	1/1.29	39	97	1/1.67
Corn-pepper	7	94	1/1.04	5	49	1/0.75
Corn-cowpeas-Peanuts	12	177	1/1.81	15	152	1/1.54

Based on the average cultivated area, crop mix and yields of APP producers during the principal growing season ("*Grande Saison*") in 1986, APP agricultural economist Foli Tinkoua estimated that a prototype farm assisted by the project consisted of 0.8 hectares of corn, 0.4 hectares of cowpeas, 0.5 hectares of peanuts and 0.2 hectares of pepper with a ne

value of CFA 267,000. It is interesting to compare this with household income figures at the time of project start up. The average net revenue of 168 households in the 1984 baseline survey for both on- and off-farm activities was CFA 135,000. The change represents almost a doubling in income, and the 1986 figure is only for agriculture and only for the long season.

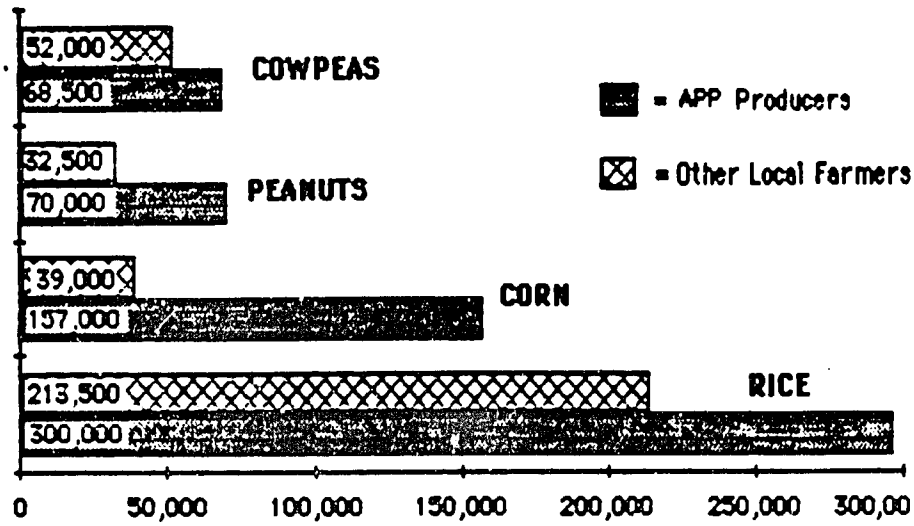
Other kinds of evidence corroborate this tendency of rising income. For example, revenue comparisons in the 1986 socio-economic survey between producers assisted by APP and other local producers did not indicate significant differences in the size of total household income---ie., those working with the project were not simply the upper income class in the region. For APP producers in 1986, average household net revenue was CFA 358,000 (US$1,166) and for the other households it was CFA 350,000 (US$1,142). But there were real differences in what household income was derived from.

Graph 5.2 1986 Net Agricultural Revenue by Terciles



What was different between these two groups was how income was derived. Other producers in the region had income derived much more evenly among several sources: agricultural, non-agricultural and "other" (remittances, etc.) For APP-assisted producers, a larger portion of their income was derived from agricultural activity--farming was more of an enterprise. The effect of the project has been to raise the surplus being produced and sold by its beneficiaries. This can be seen in Graph 5.3

Graph 5.3 Sales of Selected Agricultural Products, 1986



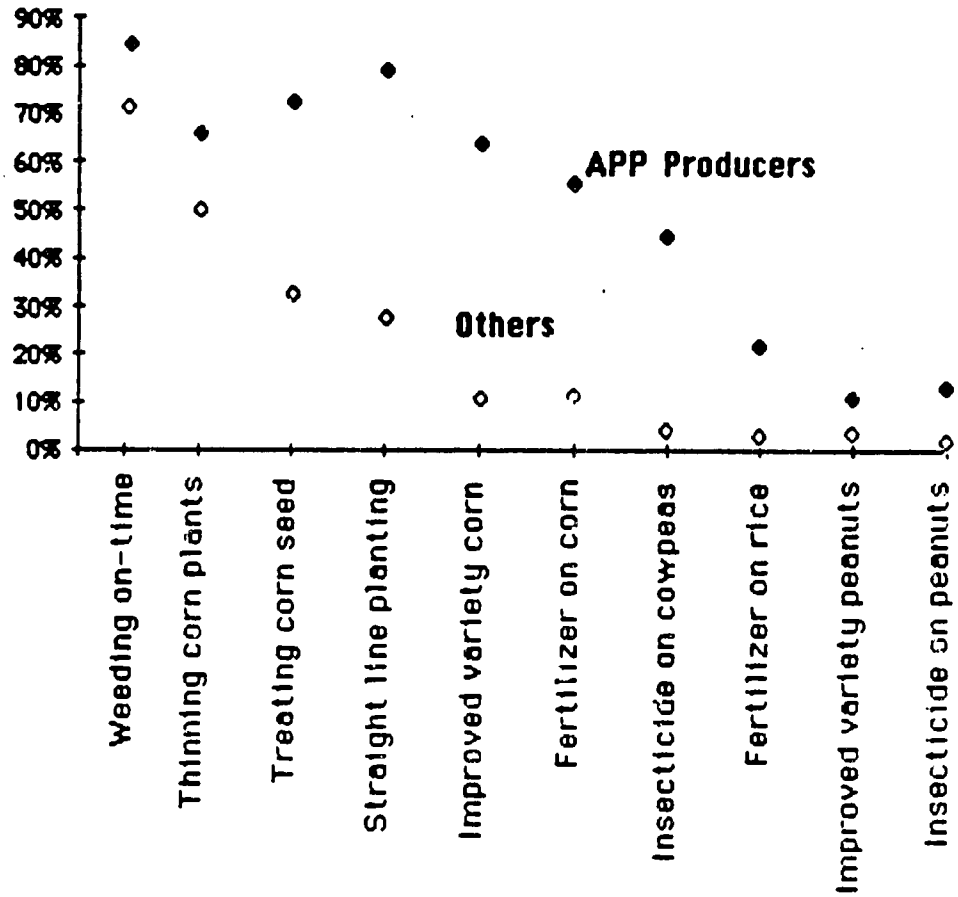
This is a trend to watch in coming years. APP producers have not nearly reached their potential for increased agricultural income for several reasons. In two years time farmers have not mastered all of the production and management techniques this more modern, intensive agriculture requires. Doing things "on time" according to the growing cycles of various crops is a new concept and requires a degree of precision in execution they are not accustomed to. It is not uncommon to see APP producers do one crop well and another crop poorly because of this. Many project producers still don't give the same attention to the higher value crops such as peanuts, cowpeas, pepper or gumbo as they do to maize. APP has not yet distributed short season varieties, but will begin in 1987. The availability of these early maturing seed varieties will help farmers considerably to farm during the short rainy season from October to December and better manage the risk of its capricious rainfall. Becoming better in these areas should increase yields and income still further.

How much will disposeable household income grow? How many households will be affected? And in what ways will income be distributed--who will it favor? These are to be watched. For a "green revolution" to occur there must be a process leading to a more modern, intensive, commercial agriculture that generates a surplus for reinvestment. It is a sign in the right direction to see agricultural income growing for APP-assisted households. To see this changing in just two years indicates significant progress.

b) Productivity Skills

What explains rising production and income? Certainly it has to do with the availability of better technology, and essential services, but also with the transformation of the practices, attitudes and worldview of the producers themselves. As Graph 5.4 shows, the project has made progress in changing the cultivation practices of those with whom it works as distinguished from other local farmers.

Graph5.4 Comparative Agricultural Innovation



The above differences can be attributed to APP's farmer training services. The 1984 baseline showed, for example, that 90% of farmers did not use improved seed for maize, cowpeas, or peanuts. Nor did they use fertilizer or insecticides. The mean fertilizer expenditure among 168 producers in the 1984 survey was only CFA 1207 (US$4.00) and 92% of those queried had no expenditures at all. In traditional African systems where there is a lot of land and very low population density, peasant farmers can rotate lands to increase fertility and leave fields fallow for years. But this is much less of an option in the Zio region which, because it is close to the capital city, has a higher man/land ratio. In the Zio area it is important to have inputs and practices that maintain soil fertility and give higher yields of higher value with less acreage.

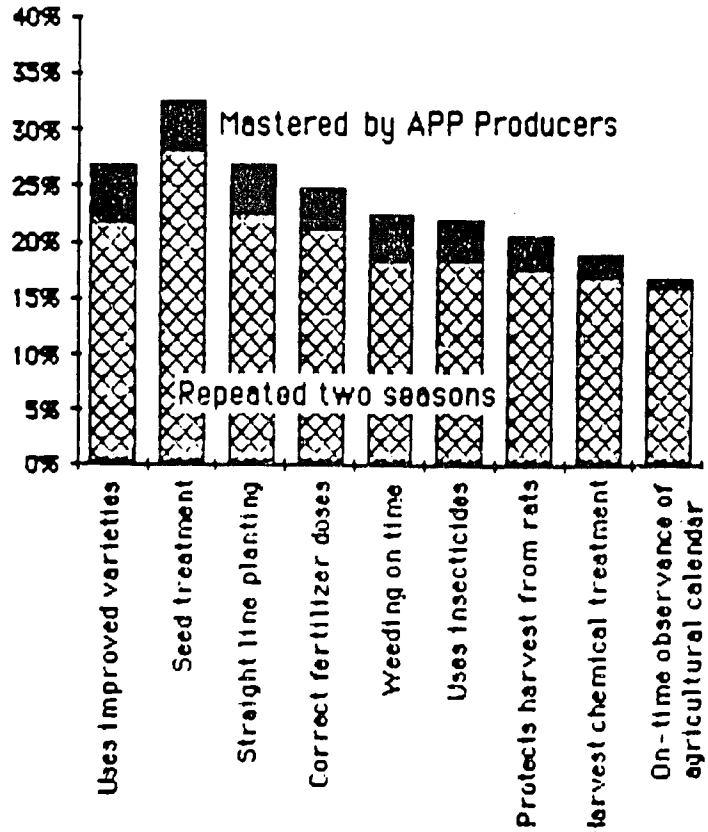
Some of the innovations APP introduces are basic essential cultivation practices such as planting in a straight line and thinning plants (proper plant density). Other innovations are more complex and take more time for farmers to understand and practice well. Inputs such as insecticides and chemical treatments require more knowledge about how to look for, identify correctly, and treat pests and diseases. Many also require require spraying on schedule according to the growth cycle of the crop, because it is too late to cure many diseases or deficiencies once they have become highly visible on the plants. This is why the proper observance of

the agricultural calendar is so important--ie., getting tasks such as land preparation, planting, fertilizing, weeding, spraying and harvesting done on time.

In a climate where multiple crops can be grown in a year, the timely observance of the agricultural calendar coupled with the use of short-season varieties are key to increased farm profitability. Before project start-up, most Zio farmers did little to take advantage of the short rainy season that follows the long season. They harvested cassava and/or made palm products such as wine. APP has made trials of short season varieties of cowpeas (60-70 days) for both rainfed and irrigated-land farmers and also of maize. It will distribute these plus improved varieties for cassava and sweet potatoes on a trial basis in 1987. This creates the potential to hevest 2 crops, but the dependent variable is farmers' ability to manage their operations so that they are "on time".

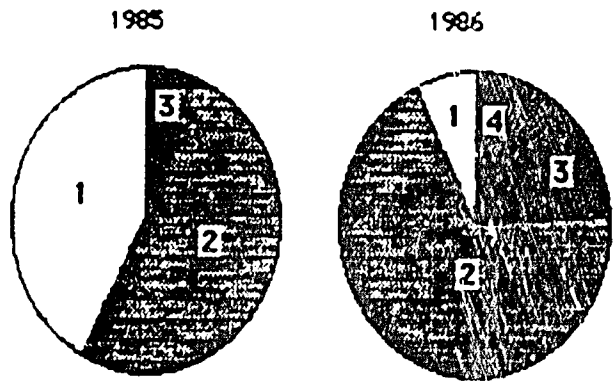
Although practices and outlooks are changing for the "innovative core" in the region that have chosen to work with APP, Graph 5.5 is a reminder that the mastery of these improved techniques is still fragile. Approximately 25% of the producers assisted by the project during the 1986 "*Grande Saison*" were repeating improved practices they had learned in 1985, and less than 5% of the total number of farmers APP worked with in 1986 were considered to have mastered the modern practices to the point that they would use them correctly as a matter of habit.

Graph 5.5 Client Mastery of Improved Agricultural Skills



Multiple cropping and crop associations are more difficult and require a higher level of management skills. A progression toward this can be seen in a year's time. In 1985, 42% of those working with APP obtained a loan for the intensive cultivation of a single crop. By 1986, project policy stipulated that farmers receiving APP assistance had to cultivate at least two crops intensively. Thus the 5% who grew a single crop did so because of some kind of breakdown due to poor farm planning or execution. The majority of APP clients have come to believe that crop associations lessen their risk and they are willing to plan a project and acquire a loan to do this. There is more hesitancy to take out loans for short season crops, however, because the rainfall is riskier, there is a very short period between the first and second seasons to harvest one crop and plant another, and the track record of APP and producers is not as good as it needs to be for managing operations during the *Petite Saison*.

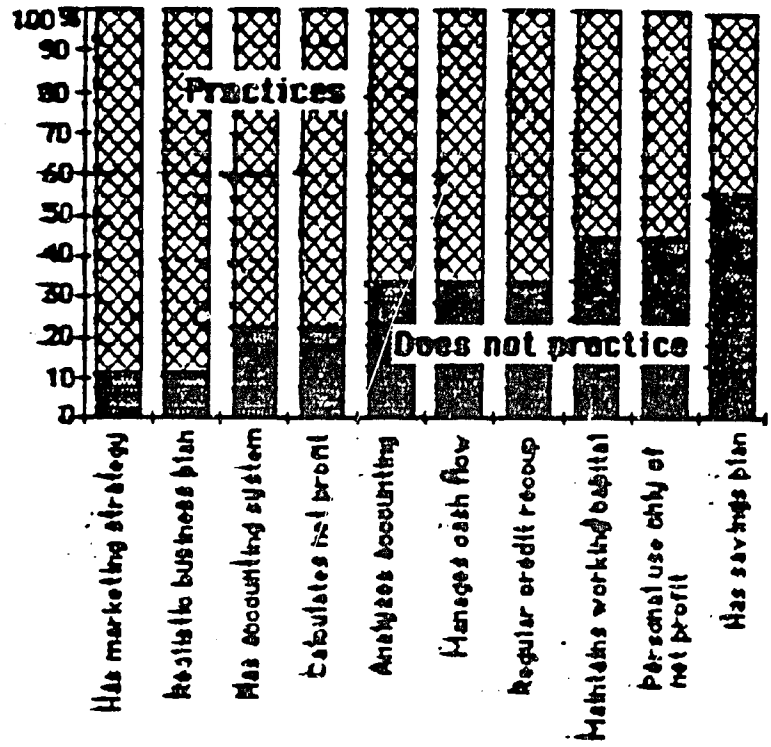
Graph 5.6 Percentage of Crop Associations in APP-Assisted Projects



93% of APP-assisted farmers grew two or more crops intensively in 1986 as compared with 58% in 1985

As producers generate a surplus, this places a bigger emphasis on the need to have financial discipline and management skills. When asked about their management practices in the 1986 survey, over 70% of all responding producers said that they did things like calculate profit and analyze markets. What distinguished a small minority was setting aside working capital and investing in a productive activity. These are the same high level skills that distinguish the non-agricultural entrepreneurs. Savings and financial discipline is hardest for them to do. Graph 5.7 indicates the degree of difficulty among management practices, with financial discipline being the hardest. This was taken among non-agricultural producers, but it is similar to the situation of small farmers.

Graph 5.7 Management Skills of APP-Assisted Producers



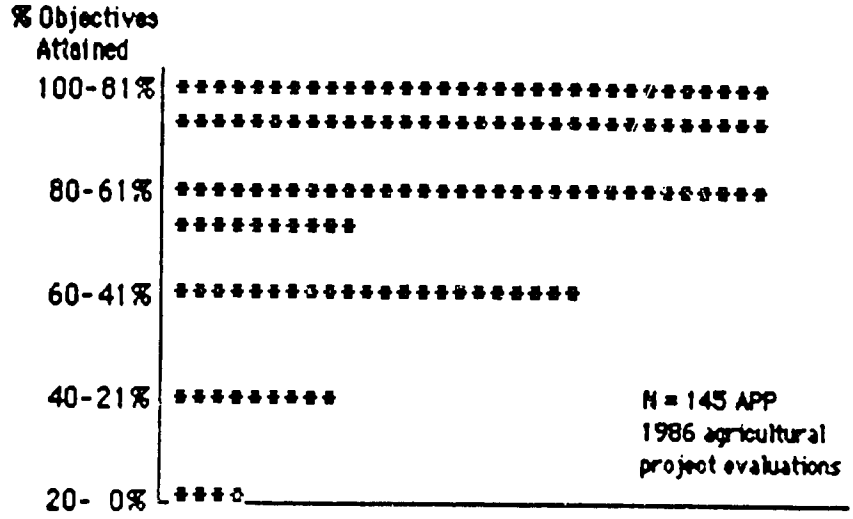
Non Agricultural Enterprises

In the first two years of implementation APP worked only in a minor way with non-agricultural clients. It furnished loans and management assistance to 22 clients: 6 artisan manufacturers; 8 food processors; and 8 small traders in agricultural and general goods. Management assistance consisted primarily of helping these producers to better organize their economic thoughts and to separate and maintain their working capital. The majority of the non-agricultural producers succeeded in doing this. The average size increase in 16 months of working capital was CFA 73,300 among this group. The non-agricultural group were easier to lend to than the agricultural producers. None of their loans have been written off and the delinquency rate is 7%. In 1987 APP will have two field agents dedicated specifically to these kinds of clients and will begin assisting such types of clients as millers and gari-makers with improved production technology.

c) Social Gains

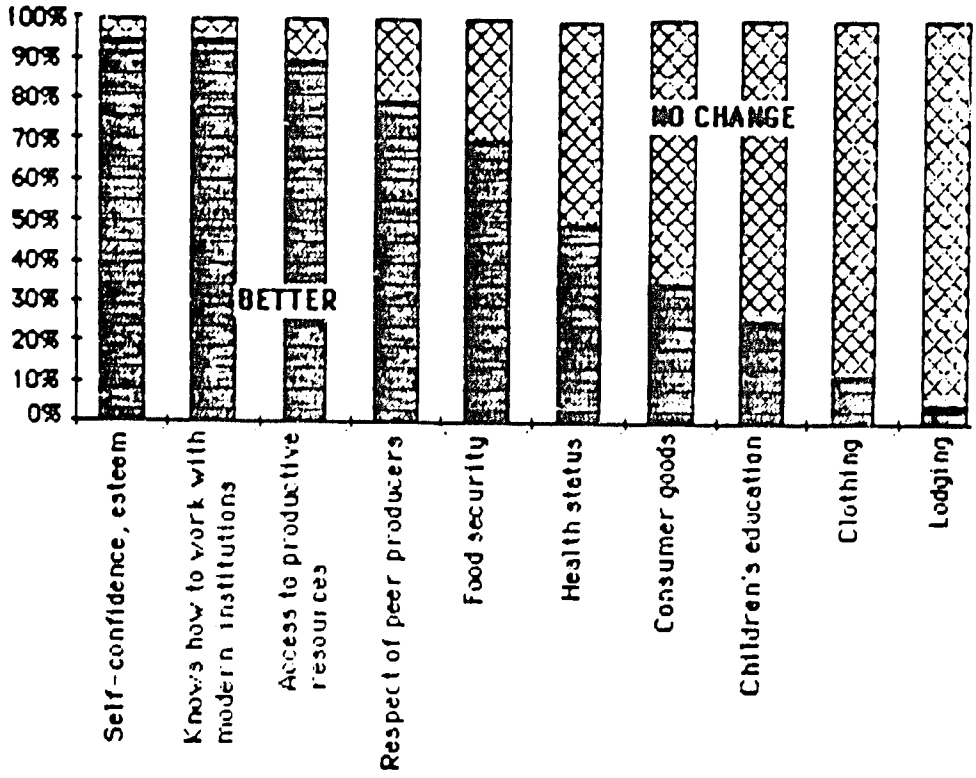
The 1986 socio-economic survey sampled 56 direct beneficiaries of APP. Their approval rating was not unanimous, but 77% judged the project's services to be worthwhile. A similar picture emerges from the project evaluations where, in Graph 5.8, it appears that most producers were successful in accomplishing what they set out to do. Only 9% achieved 40% or less of their goals.

Graph 5.8 Attainment of Small Enterprise Project Objectives



Analyzing what clients identified as social gains, a project may increase income, but it does not produce major living changes. A majority of those assisted by APP said that their projects gave them more self-confidence, and knowledge of working with modern institutions. (Ninety percent said they'd never had a formal loan before APP.) Seventy percent felt they had obtained greater food security and perceived reduced risk of subsistence.

Graph 5.9 SOCIAL GAINS PERCEIVED BY APP AGRICULTURAL PRODUCERS, 1986

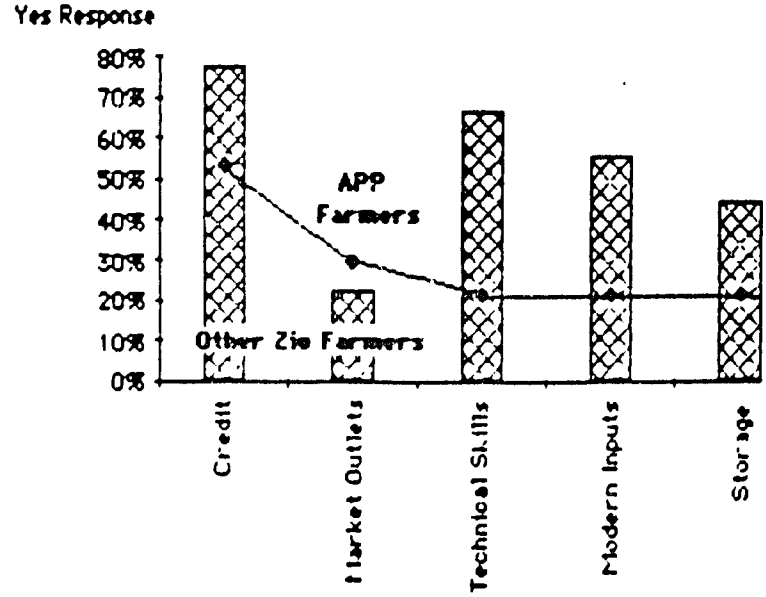


d) Findings of the 1986 Socio-Economic Survey Bearing upon Future Implementation

APP/Togo's methodology appears to be successful in putting the producers it has worked with on the road to increased yields and productive skills. Income changes, although not as measureable, appear to be increasing as well. Analysis of participant responses showed a number of areas where constraints exist, and where potential major gains can be made. Graph 4.10 reveals how Zio producers ranked obstacles to their productivity. Highest on the list for both APP and other producers alike is credit. Some of the demand for credit may be unsducated, but the need is very real. Average input expenses for one hectare of irrigated rice are CFA 115,000---approximately a third of a rural household's disposeable income. Average input expenses for a hectare of cowpeas are CFA 35,000 which is big money to a farmer who customarily spends CFA 500 for a new hoe blade or CFA 1500 for a new machete.

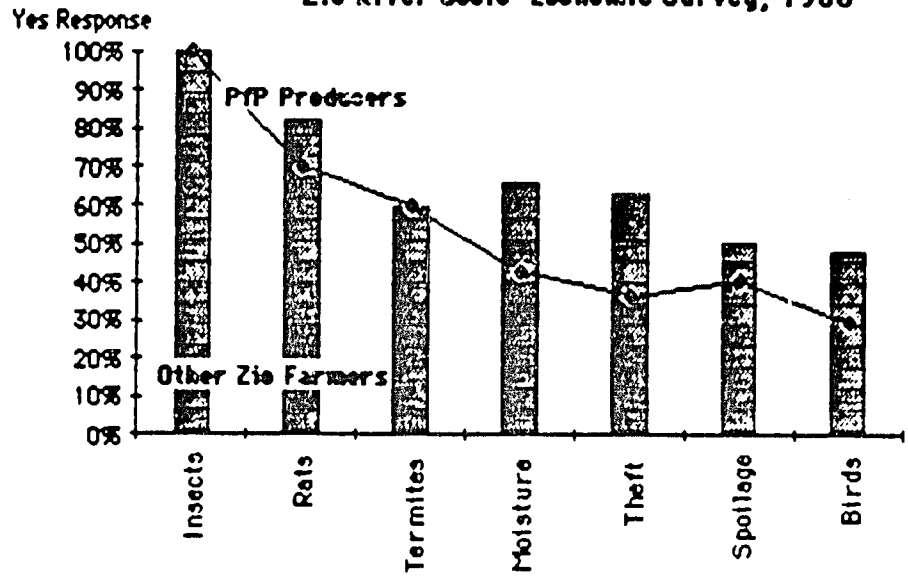
Beyond credit, the response pattern to questions about constraints reflect the difference between producers who have access to modernizing institutions and those who do not. For APP farmers producing a surplus, an issue confronting them is where to sell it. But for the majority of producers, access to technical assistance, and improved inputs and storage are their first generation of needs. They do not grow enough to rank market outlets as a major constraint.

Graph 5.10 Constraints to Agricultural Development
Zio River Socio-Economic Survey, 1986



Post-harvest losses are another serious problem. APP producers lose on the average of 30% of their harvest and for others it is higher.

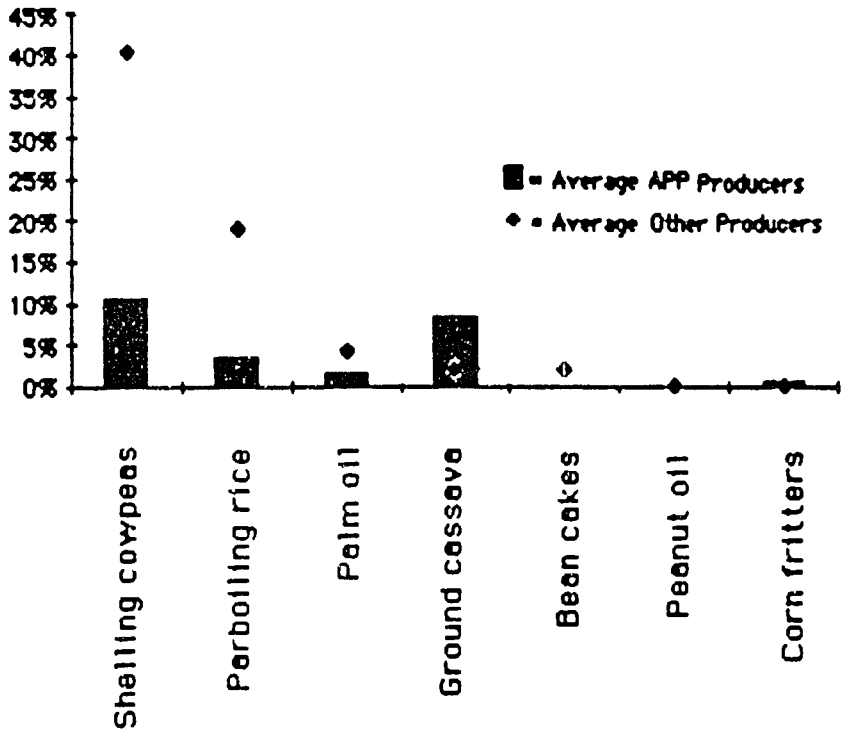
Graph 5.11 Problems with Post-Harvest Loss
Zio River Socio-Economic Survey, 1986



Traditional conservation of a basic crop such as maize consists of storing it on the cob in a straw-mat or wire grainery. The traditional grainery will air dry the crop, but it will protect it from little else. Improved conservation need not be costly, but it does require a change in practices. Producers must shell the corn, chemically treat it and store it in bags. The same is true for cowpeas, which are highly susceptible to insect infestation during storage and which must be treated and conserved in closed containers. Now that farmers are producing a surplus, it is important to cut down on post harvest losses and go add some value to primary products and/or be able to sell them when prices are high. This second generation of post-harvest management challenges is what APP began turning its attention to in 1986 and will place increased emphasis on in the future.

The 1986 socio-economic survey also highlighted how little value was added to primary products grown in the region. In large part, this is because few farm families produce a surplus of high value cash crops and/or are able to conserve it. Oil cannot be made without peanuts to press. Cassava yields must be high enough to have a sizeable amount for processing. As the yields of these crops increase, so too will the possibilities for processing.

GRAPH 5.12 PROCESSING OF AGRICULTURAL PRODUCTS, 1986



Also very low was the productivity from animal raising, both in terms of income derived from it and improved practices. Most producers in the Zio region are not accustomed to animal raising. They keep a few goats or sheep for pets or feasts, but as Graph 5.13 shows, 75% of those who do have animals earn almost nothing from the activity.

GRAPH 5.13 DISTRIBUTION OF NET REVENUE FROM ANIMAL RAISING
Zio River Socio-Economic Survey, 1986

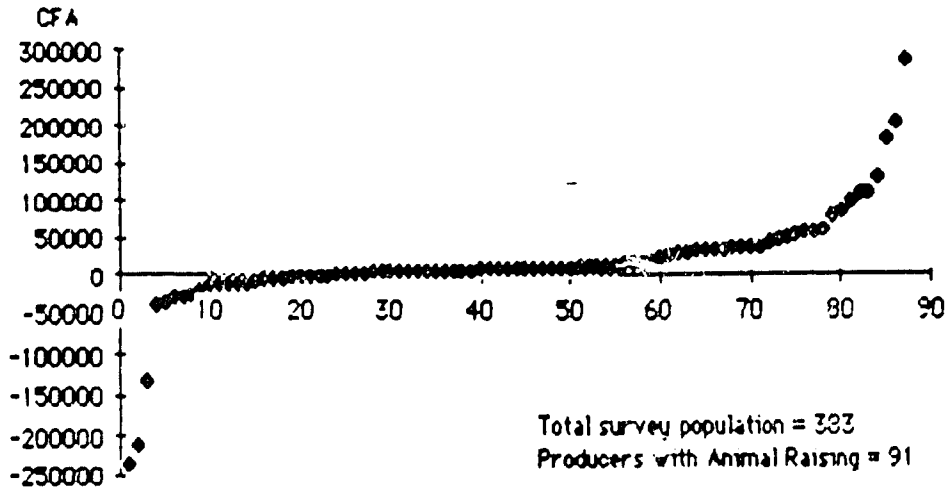


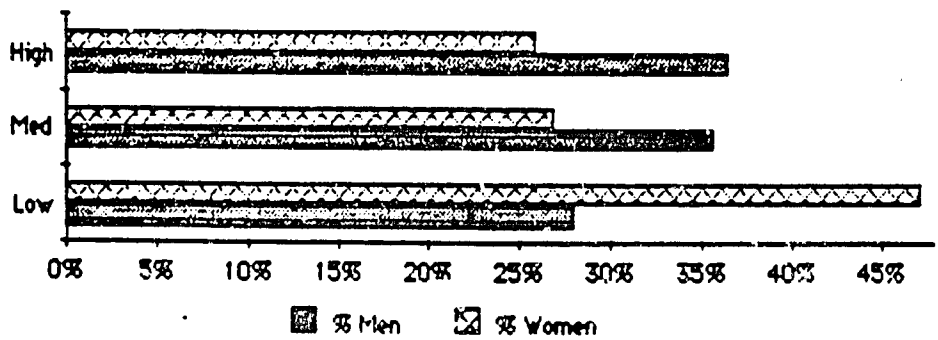
Table 5.3 Use of Improved Animal Raising Practices
Zie River Region Socio-Economic Survey, 1986

	PfP	Other Producers
Vaccination	6%	10%
Castration	9	16
Night corral	15	14
Deworming	6	8
Dipping	6	8
Feeding minerals	2	3
Feeding by-products	15	16
Controlled breeding	9	11
	N = 49	N = 334

For many in the project region, the size of herds is negligible. Village animals are highly inbred and don't grow well. Some of the improved practices that need to be introduced are indicated above. APP will begin providing technical assistance for animal raising as a small enterprise in 1987. Potential in the area is good, and there are many crop residues for fodder. But it will take time for local producers to become accustomed to a "cut & carry" system which brings food to penned livestock and reduces the conflict between animal raising and agriculture in high-density areas.

Another of the findings that had been known by the project but which the 1986 survey reconfirmed was the income differences between male and female producers.

Graph 5.14 Distribution of Net Revenue
by Male and Female Producers, 1986



Land is inherited among males in the region, which creates a land tenure disadvantage for female producers even though they can rent land or obtain small parcels within their family unit. Women do raise animals in the area, and their main income-generating activities are small commerce, food preparation, processing and marketing. A service delivery strategy that assists a more diversified range of economic activities and formation

of groups in addition to farmers will have a more equitable income effect over time among both sexes.

Another equity issue facing APP is the size of agricultural projects which it will permit clients to do. As the package of technology, credit, inputs, and services results in a remunerative cash agriculture, those who already know how to engage in this will want to do more, especially on prime lands such as the Zio irrigated Perimeter. APP will need to adopt policies limiting the size of project (or, level of services) any one farmer can receive in order to insure that access is distributed widely to it.

APP management is aware of many of the socio-economic constraints and the equity mentioned here. Expansion of assistance to rural non-farm enterprises will aid some of the principal economic activities of women. Group formation should also have the effect of including them more--50% of the members of the present groups are women, for example. The project is not at a stage yet where the equity questions are the major ones. Much more important today are simply the challenges of assisting local producers to increase yields and to manage well their surplus once it is produced.

B. Scope and Quality of Service Delivery

In two years, APP/Togo assisted 422 projects with its most intensive form of small enterprise development (credit-TA-inputs). Total lending was CFA 22,823,185. Average loan size per project was CFA 54,083 (US$170). The large majority of these projects were for rainfed agriculture (78%) with irrigated agriculture being the second most frequent(17%). All of these loans were for food crops. Table 5.4 on the page that follows gives the number and types of projects assisted by APP for half-year periods starting in January, 1985. Table 5.5 gives APP/Togo's lending activity by project type during this same period.

TABLE 5.4
NUMBER AND TYPE OF PROJECTS ASSISTED BY APP, 1985-1986

	First Half '85	Second Half '85	First Half '86	Second Half '86	TOTAL
Crop Production (rainfed)	32	26	185	85	328
Crop Production (irrigated)	8	26	7	30	71
Livestock	1	0	0	0	1
Commerce-Consumer goods	2	3	2	2	9
Commerce-Raw materials	0	0	0	0	0
Commerce-Food crops	0	1	0	0	1
Commerce-Food processing	2	3	1	0	6
Artisan-Production/Repair	3	1	0	2	6
Transport	0	0	0	0	0
					422

TABLE 5.5
CUMULATIVE APP LENDING ACTIVITY BY ECONOMIC SECTOR, 1985-1986

	First Half '85	Second Half '85	First Half '86	Second Half '86	TOTAL
Crop Production (rainfed)	2,245,000	492,010	6,407,340	4,236,355	13,380,705
Crop Production (irrigated)	824,400	2,773,700	600,790	2,911,270	7,110,160
Livestock	450,000	0	0	0	450,000
Commerce-Consumer goods	235,000	294,200	334,200	170,000	1,033,400
Commerce-Raw materials	0	0	0	0	0
Commerce-Food crops	0	90,000	0	0	90,000
Commerce-Food processing	146,800	130,000	27,800	0	304,600
Artisan-Production/Repair	287,920	59,400	0	107,000	454,320
Transport	0	0	0	0	0
					22,823,185

In 1986 APP sold inputs to 250 farmers who did not have loans or technical assistance., and will increase input distribution in 1987.

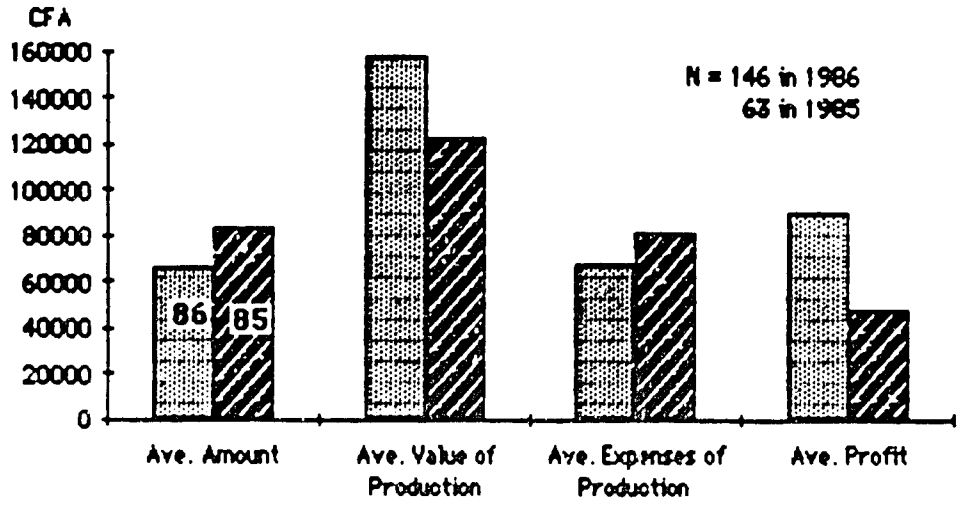
In the first two years of implementation APP assisted 12 group projects, 11 of them in year two. These included rainfed producer groups and one water user's association in the Zio Irrigated Perimeter. Plans for 1987 are to work with 15 groups, including two in the Perimeter. APP also has made an arrangement to work with FUSEC, the Togolese Federation of Credit and Savings Cooperatives. APP will train members of four local savings and credit cooperatives (COOPECs) in how to invest their savings productively in small scale economic projects.

The form of recruiting clients will also change significantly in 1987. APP will demonstrate innovations more actively and widely throughout the zone and invite farmers who are not already clients. At least ten of these farmer field days are planned for the 1987 campaign. Ostensibly the demonstration program is to show farmers low or no cost improved techniques which they can practice on their own; but it will also serve to put several hundred new producers into efficient, effective contact with the model farmers, agents and field results of the project.

The benchmark target for services delivered by year 5 of the project is to assist at least 2,000 producers with APP's intensive package of services (credit-TA-inputs). From Year 1 to Year 2 of implementation, APP assisted projects grew from 58 to 270—nearly a five-fold increase. The average agent/client load grew from 10 to 22. A target of 500 producers is projected for 1987. The overall benchmark is well within reach, as the project is aiming for an eventual ratio of fifty clients per field agent. Assuming 14 field agents, this implies a volume of loans and small projects of approximately 700 per year. 1987 will be the first year the staff of the project is up to full strength and all sectors of the project area are being provided with service. It will be interesting to see what is the scope of service delivery. The years 1988 and 1989 will be best to judge this, however, because by that time all elements of the project will be in place, the field staff will be well-experienced, and the group promotion methodology will be more effective.

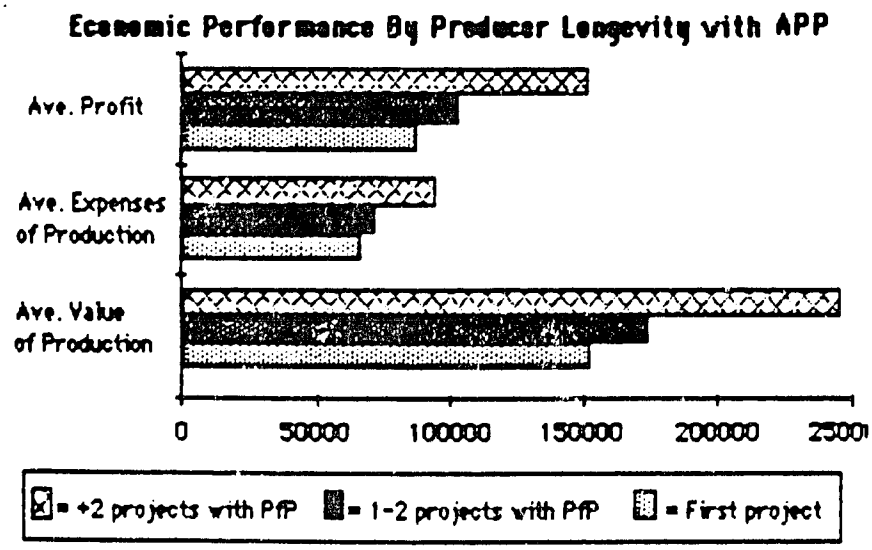
Of course, enterprise development is not just a matter of numbers served, but the quality of performance that counts as well. For a small business development institution, output indicators must always be judged relative to performance indicators. Graph 5.15 shows that in its first two years, APP has been able to increase signficantly the value of projects assisted as well as capital loaned.

Graph 5.15 Economic Performance of APP Agricultural Projects, 1985 and 1986



The above indicators of increasing effectiveness are not the result of 1986 being a superior year to 1985 in terms of rainfall. It was actually poorer. Sorting the 1986 economic performance of producers by how long they have received assistance, one can also see that there is a difference in economic impact according to how long one has received project services. Those with more training perform significantly better.

Graph 5.16

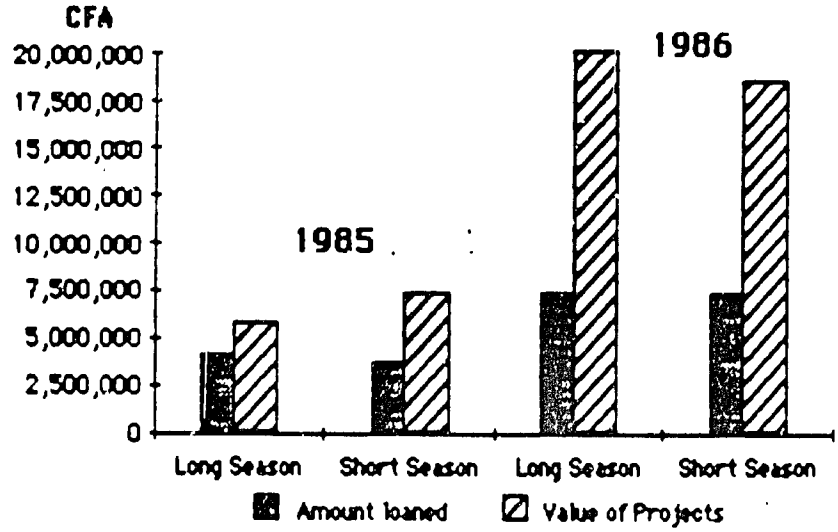


Another equally valid way of interpreting the data above is that the farmers with the most longevity with APP are also the ones who, in general, undertake larger projects that risk more, but also are more successful in managing that risk.

The ratio of loan capital to the value of projects during the main growing season of 1985 was 1/1.41 and in 1986 it was 1/4.17, an increase of 295%. What explains has been the introduction of higher value crops, plus APF's policy of lending little or nothing for agricultural labor. One can see from the graph below that in 1986 producers were given smaller loans than in 1985. The average value of their production increased while expenses decreased. As a result, the average profit of the agricultural projects assisted by APP nearly doubled, from CFA 48,000 in 1985 to CFA 90,500 in 1986.

Graph 5.17

Change Over Time of APP Capital Loaned and Project Value



Below are the actual cumulative figures for the amount that APP/Togo lent and the value of projects.

Table 5.6 APP Capital Loaned, Value of Projects and Ratio of Value to Capital Loaned, 1985-1986

	Long Season 1985	Short Season 1985	Long Season 1986	Short Season 1986	Total 85-86
Value of Projects	5,894,592	7,368,204	30,757,740	18,770,108	62,790,644
Amount Loaned	4,189,120	3,839,310	7,370,130	7,424,625	22,823,185
Ratio Loan Capital-Project Value	1:1.41	1:1.92	1:4.17	1:2.53	1:2.75