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REPORT ON
THE BADEKU EXPANDED PROJECT ON RURAL DEVELOPMENT

by

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Appendix 1. Progress Data

BADEKU EXPANDED PROJECT ON RURAL DEVELOPMENT^{1/}

A. U. Patel and S. O. Olayide*

I. Origins

The Badeku village development project was started on a very moderate budget by the Department of Agricultural Economics and Extension^{2/} of the University of Ibadan in October, 1970 with the aim of providing "laboratory situation" for integrating agricultural research, education and extension as an essential step towards a rapid and enduring impact on agriculture. Badeku village, situated 17 miles from the Campus in Ibadan South-East Division, was selected for this purpose. It was chosen from a list of 10 villages provided by the Western State^{3/} Ministry of Agriculture and Natural Resources. It was chosen for three reasons - its size (population about 1,300), location (within 20 miles from the campus, approachable by all season motorable road) and the receptivity of the people to change and extension staff.

1/ The Badeku Expanded Project¹⁵ planned and implemented jointly by the following University staff: Dr. A. U. Patel (Chairman), Dr. J. A. Ekpere (Co-Chairman), Mrs. C. E. Williams (Home Economics activities), Dr. (Mrs) A. Oyemade (Health Activities), Dr. F. C. Weidemann (Marketing and adaptive trials), Dr. T. S. Biggs (Evaluation) and Mr. R. J. Matthewman (Livestock improvement). Prof. L. F. Miller and Prof. S. O. Olayide provide guidance and leadership. Their contribution in the preparation of this paper is highly appreciated.

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- 2/ Now separate Departments of Agricultural Economics and Agricultural Extension Services. The project is now conducted by the Department of Agricultural Extension Services.
- 3/ Western State was divided into three states in 1976; the areas included in the project are situated in Oyo State.

The work in Badeku started with an initial socio-economic survey, result demonstration on maize and mass vaccination against cholera in 1970.

In December, 1973 the project was expanded^{4/} to 18 villages and to 26 villages in 1974 in order to simulate the problems of larger extension programmes involving regional planning and resource allocation with local participation. At present, there are 30^{5/} villages including small hamlets. These villages are situated in two units. In the Badeku area, the total number of villages is 19 and this is designated as Egbeda unit as it centred upon the village of Egbeda, and 11 villages in the Fashola region of the Oyo South Division in the derived savannah zone, forty-two miles from the University and this is designated as Fashola unit.

^{4/} During the first three years, Badeku village project had already demonstrated its value as a model for rapid agricultural development. However, a project for agricultural development has limited value. It does not represent an administrative unit, so that as the procedures and techniques used successfully in it can be reproduced with full confidence through the normal extension services whose unit of operation is a group of villages. Therefore, the project was expanded. After expansion of the project, more activities were started on health improvement and home economics. The project was expanded with financial support from the Rockefeller Foundation. The Ministry of Agriculture and Natural Resources, Oyo State has seconded three extension assistants to this project which made it possible to include more villages and conduct more activities.

^{5/} More villages joined the project on their own volition, which shows the success of the project. The villages in both units are situated within a radius of about 10 miles. Villages farther than this distance want to join the project, but are not included. The farmers of small hamlets within the radius of 10 miles join with the neighbouring bigger-villages to get the benefit from the project.

II. The Situation

1. Agriculture

Agriculture is still a major sector of the Nigerian economy notwithstanding the present heavy reliance on petroleum as the generator of foreign exchange. Agriculture provides gainful employment to over 70 percent of the population, food and raw materials. Since the beginning of this decade, each national development plan has given increasing priority to agriculture. Agricultural and rural development is the responsibility of the state government, though, the Federal Government provides general infrastructural services and initiates certain projects through the states. For administrative purpose, the states are divided into circles, divisions and areas.

In order to study the specific situation of the project area, a socio-economic survey^{6/} was conducted from January to March, 1974 in 14 villages of the Egbeda unit and 6 villages of the Fashola unit. Almost all heads of households were interviewed with a structured questionnaire.

The total population of the project area of 20 villages was 6,367, of which 6,075 (1,124 families) and 292 (60 families) were in Egbeda units respectively. The average size of family was 5.40 in Egbeda unit and 4.87 in Fashola unit. Of the total population, 22% and 18% in Egbeda and Fashola units respectively was non-resident, of which 52 percent were

^{6/} In 1970, a socio-economic survey was conducted in Badeku when the project was started as one village project. Badeku was also surveyed in 1974 along with other villages.

sons reflecting the fact that young males are migrating from the rural areas. The remainder of the non-resident population is made up of wives and other dependents.

In both units, the predominant religious affiliation is Islam, practiced by 78% of populus, while Christianity is followed by 20% and 12% respectively in Egbeda and Fashola units.

In both units 24.5% heads of households have more than one wife.

In Fashola unit, 80% of the population received no formal schooling and of the 20% that have received some education; it was either of a religious nature or only a few years of primary school training. The educational level of Egbeda unit was somewhat higher with 60% of the population never having attended school. Comparatively, more females than males had no formal schooling, 95 and 70% females in Fashola and Egbeda units respectively had no schooling. The population is predominantly Yoruba speaking.

With respect to occupation, 94 and 93% farmers in Fashola and Egbeda units respectively said that their primary occupation was farming, whereas 6% and 0.3% respectively were non-farmers. 60 and 42% farmers were full-time farmers in Fashola and Egbeda units respectively. Important secondary occupations were hunting, trading, palm-wine tapping, carpentry, tailoring/sewing and barbing.

In Fashola unit, as a result of the range burning and farming, a large proportion of the area is degraded into open savanna wood-land with tussocky grasses about 5-10 feet tall. The annual rainfall is about 45" falling within 78-100 rainy days with two peaks (May-June and September -

October). Tree crops like cocoa and oil-palm are very few around, rather this area is an ideal sector for food crops for which it has specialised. The major crops are yams (about 40% of cultivated area), cassava (30%) and maize (15%). Among other crops are kolanut, oil palm, cocoyam and cowpeas. Mixed cropping is usually practiced, with crop combinations of cassava with maize/yam and melon and beans. The average size of land holding is 14.78 acres, of which 7.25 and 7.53 are under cultivation and bush fallow respectively. A plot is actively cultivated for 3 - 4 years and then returned to bush fallow for 5 to 10 years or more. All the farm operations are performed by human labour. Although the small-holder category prevails, some inequality does exist in the distribution of cultivated land. 16% of the farmers control 42% of the cultivated area.

In Egbeda unit, the climate is typically humid tropical rain-forest with temperatures ranging from 70°F to 90°F most of the year. The rainfall has two peaks, in June and October, with total rainfall of 40"-60" from March to November. December to March is dry period. The major crops are cocoa (26% of cultivated area), oil-palm (12%), kolanut (12%), orange/citrus (12%), cassava (12%), yam (7%), maize (7%), cocoyam (3%) and beans (0.3%).

Mixed cropping is prevalent both in cash and food crops. The pressures of a greater population density and the popularity of growing a cash export crop like cocoa is shown by the ratio of cultivated to fallow land. In Egbeda unit the ratio is approximately 3:1, while in Fashola it is 1:1. The average size of land holding in Egbeda is 14.2 acres, of which 10.8 acres is under cultivation. Bush fallow practice is prevalent as in Fashola unit. The farmers are small holders. Seventy-five per cent farmers cultivated 10 acres or less area. Twenty-six per cent farmers control 63% of the land. This shows that the cultivated land in Egbeda is distributed more unequally than in Fashola.

2. Livestock

In forest zone (Egbeda unit), about 80%, 60% and 40% households owned chickens, goats and sheep respectively, with a mean of 21 chickens, 6 goats and 4 sheep. Whereas in the derived savannah zone (Fashola unit), the number of households having livestock is lower; about 70%, 50% and 30% households owned chickens, goats and sheep respectively, with a mean of 22 chickens, 5 goats and 6 sheep per household. The means include young animals also. About half of the chickens may be chicks of less than 8 weeks old. Cattle are owned by some farmers only in the Fashola unit, but are not maintained by them, rather they are given to the Fulani herdsmen

for maintenance. Cattle are neither used for farm work nor for transport. Both project units are predominantly Moslem, and therefore pigs are seldom reared. Chickens, goats and sheep are reared as free-range scavengers on a low input basis. About 4% households used deep litter, 0.6% used pre-mixed feed and 1.0% used improved poultry.

3. Contact with Rural Development Personnel

Except for community development workers, the farmers in both the project areas are familiar with the development personnel. However, though they are familiar, only a few have actually received benefits of their services. With respect to the agricultural extension worker, 73%, 57% and 35% know him, met him and went to him for advice respectively. With respect to the agricultural credit assistant, about 49%, 25% and 16% know him, met him and went for advice respectively. In relation to the health worker, 68%, 50% and 25% know him, met him and went for advice respectively. With regards to the adult education teacher, 51%, 36% and 25% know him, met him and went for advice respectively. Whereas with respect to the community development worker, only 28%, 12% and 8% know him, met him and went for advice. Considering that many rural development personnel have been appointed in the area for more than a decade, the amount of advisory contact appears significantly small.

4. Sources of Information

Radio is by far the most important source of farm information used by 84% and 60% farmers in Egbeda and Fashola respectively, followed by demonstration plots used by 52% and 25% farmers respectively. Agricultural shows is used by 46% and 29% farmers of Egbeda and Fashola respectively, and newspapers are used by 22% and 18% respectively.

5. Participation in Local Groups

About 75% and 10% farmers of Egbeda and Fashola units respectively reported that they are members of Cooperatives. Higher participation in cooperatives in Egbeda is due to cocoa as a cash crop which is bought by the Cooperative Produce Marketing Union. The Union does not assist the farmers of this area by providing credit and sale and distribution of inputs such as fertilizers, chemicals and farm equipment. The Union performs only the activity of buying cocoa and palm kernels in this area. A few villages had registered primary cooperatives, but they are now inactive.

The farmers take more interest in traditional informal groups. About 60% and 46% farmers of Egbeda and Fashola respectively are members of these groups which conduct activities such as money contribution and occasional mutual help on the farms. These

groups are more active and members are of a certain age group. They meet regularly and keep simple records.

6. Use of Improved Agricultural Practices

The figures in Table 1 show that most of the farmers of Egbeda have heard of all the important improved agricultural practices, whereas in Fashola unit only fertilizers and improved maize seed are heard by most of the farmers. However, the use of these practices is done by very few farmers in both units. Forty-seven per cent of farmers in Egbeda spray cocoa trees, because it is a cash export crop. More farmers of Egbeda use the improved practices than the Fashola farmers.

7. Health

Wells for drinking water are usually found in bigger villages. The people of small villages usually drink stream water which is not hygienic. Even in big villages most of the wells are dry during the dry season and villagers use stream water for drinking.

The data of a special health survey^{7/} conducted only in Badeku village indicate that 6% households used sanitary pots, 10% pit latrines and 84% defecated indiscriminately in the bush.

^{7/} This survey was conducted by Dr.(Mrs) A. Oyemade in Egbeda Unit. The sample consisted of 178 randomly selected households.

Table 1. Use of Improved Agricultural Practices by Farmers in 1973

Practice	Percentage of Farmers Who			
	Heard about it		Used it	
	Egbeda Unit	Fashola Unit	Egbeda Unit	Fashola Unit
1. Fertilizers	89	95	17	16
2. Improved Maize Seed	95	94	22	14
3. Improved Cocoa Variety	97	N	18	N
4. Spraying Chemicals on Cocoa Trees	97	N	47	N
5. Improved Oil palm variety	93	N	3	N
6. Improved Cassava variety	90	22	2	0
7. Improved Kolanut variety	87	N	1	N
8. Improved variety of citrus	78	N	3	N
9. Improved Cowpea Variety	75	15	15	1
10. Use of insecticide for storing farm produce	85	16	10	6
11. Spraying insecticide on maize crop	85	37	26	4
12. Loan from Credit Corporation or Government	90	67	2	4
13. Tractor hiring unit of Government	69	62	1	2

N = These crops are not grown in the Fashola Unit.

Only 8% households thought that there were health hazards associated with indiscriminate defecation. About 5% households know that drinking water from a highly polluted source might result in cholera. With respect to antenatal care, 92% women receive it from the health centre doctors and 14% go to native doctors. Only 11% of the mothers who attend these medical institutions deliver there, the rest have their babies at home attended mostly by traditional midwives, and the umbilical cord is cut with the blade of palm leaf. About 90% of the children examined were not immunized against tuberculosis, poliomyelitis and measles. About 65% had smallpox vaccination and 45% were immunised against diphtheria, whooping cough and tetanus.

The survey in Badeku further shows that nearly 25% of the children die before their fourth birthday which indicates a high mortality. Blood films from some farmers revealed that 14% and 2% have malaria parasites and microfilaria respectively. Stool specimens from farmers show a very high infection rate for both hookworm and ascaris. A detailed physical examination of 150 of the farmers shows that the nutritional status was on the whole satisfactory apart from a high incidence of dental caries and gingivitis which occurred in 40%; 52% had symptoms of some skin diseases; 11% were hypertensive; and 12% had inguinal hernia.

III. The Plan

1. Objectives

The general objective of the project is that of enhancing rural development. While agricultural development is the focal activity, improving health and women's welfare are important activities in the project. The major specific objectives of the project are:

(1) Innovative Area: The project area should serve as a testing ground to see how quickly technological changes in agriculture, health and nutrition can be achieved. Keeping in view that these changes and organisational methods developed must be reproducible elsewhere in the state.

(2) Laboratory for Concerned Students and Staff of the University:

The project area should provide the students and staff of the University with the 'laboratory' type situations where they can study and participate in rural development.

(3) Link between Research Workers and the People:

The project should provide the concerned research workers of the University and other agencies with the opportunity to try their research results in the village set-up. It would also enable them to come in greater contact with the villagers to understand their problems and reactions and thereby undertake research that is more relevant to development problems.

(4) Local Initiative and Self-Reliance:

The local people should be involved in planning and executing the programme of rural development which could change their lives. The major responsibility for the programme will be with the people's representatives and their organisations.

2. The Plan of Action

The plan of action for achieving the objectives consists of:-

- 1) selecting the project area as discussed in the first part of this paper,
- 2) conducting a bench-mark survey to know the socio-economic and agricultural situation and problems as discussed in the second part of this paper,
- 3) formulating a development programme as described below in the specific projects; and
- 4) execution of the programme by involving the local people and their organisations, coordinating the services of government and other developmental agencies.

3. Specific Projects

From the results of the bench-mark survey and discussions with scientists a few specific projects^{8/} were developed which are

- 8/ The farmers took good care of their cocoa crop by spraying chemicals, because it is a cash export crop and the state government runs a special cocoa development scheme, therefore it was thought not to work on that crop. Rather, the main emphasis in agriculture is laid on the food crops.

as follows:

- (a) Improved seed programme: The figures in Table 1 show that most of the farmers do not use improved varieties of crops such as maize, cassava and cowpeas. Improved seeds for these crops are available at the seed store of government or on government and research farms. The farmers will be encouraged to use this seed.
- (b) Fertilizer programme: The figures in Table 1 also show that only 16% of the farmers used fertilizer. It is subsidised by the government and available at the fertilizer stores of the government. The fertilizer in rural areas is also sold through selected traders who are authorised as fertilizer agents. The distribution is done through the government trucks if the demand is more.

A demonstration programme will be conducted to show the use of improved seed and fertilizers for maize, cassava and cowpeas crops.

- (c) Introduction of new crops: The scientists of the International Institute of Tropical Agriculture, Ibadan found that some beans and sweet potatoes can be grown easily and profitably around Ibadan. Special adaptive trials will be conducted on these crops.

(d) Farm Labour saving Methods: Many studies have shown that labour is one of the important constraints in agricultural development. All farm operations are performed by human labour. Therefore, the farmers cannot easily increase their cultivated acreage. Migratory labourers are not available at the right time and in required number. Farm labourers within the village are difficult to get at the right time. The farmers also cannot timely perform the farm operations such as planting, fertilizer application and weeding.

Tractor ploughing, use of herbicides and improved farm implements and equipment will be introduced for saving farm labour.

(e) Storage and Marketing of Maize: When the farmers produce more maize in the villages, the price in the local markets significantly drops. Moreover, the traders do not want to buy wet maize harvested in August (moisture at this time is about 23%), because it cannot be sun-dried due to cloudy and rainy weather till November. They do not have artificial driers. Therefore, a programme of storing maize on cobs in cribs with improved ventilation by using an insecticide will be developed with the guidance of scientists. Farmers will also be encouraged

to contact wholesale traders in towns and big poultry farmers for marketing maize.

(f) Use of Agricultural Credit: When the farmers are convinced about the advantages of using improved seed, fertilizers and plant protection chemicals, and storage of farm produce, they will need loan for buying these inputs and for storage. There is a State Agricultural Credit Corporation which provides credit for farmers. The farmers of the project area will apply for the loan from the Corporation.

(g) Livestock Programme: Improvement in the management of poultry, rabbits, sheep and goats by small farmers will be undertaken with few farmers to serve as demonstration in the beginning.

(h) Safe Water for Households: Villagers will be made conscious of the hazards of drinking polluted water from streams. Importance of boiling water will be explained. With the help of the State Water Corporation, new wells will be dug in selected villages.

(i) Community Centres: Villagers need a central place where they can have meetings for discussing developmental problems with the development personnel. Community centres do not exist in villages. Attempts will be made to construct community centres

with the self-help and some financial support from the Local Government Authority in selected villages.

(j) Nutrition: The survey showed that there is need for the people to eat more foods rich in protein and vitamins. Attempts will be made to encourage villagers to use more cowpeas and leafy vegetables in their diet.

(k) Health and Sanitation: The special health survey showed that much needs to be done in improving health conditions.

The efforts will be confined to:-

- i) use of sanitary water;
- ii) clean-up campaign in the villages;
- iii) proper disposal of human faeces;
- iv) child and maternal care;
- v) immunization;
- vi) parasitic infections; and
- vii) routine medical care;

(l) Educational activities: It is important to broaden the outlook of villagers and stimulate their desire for something new and better. This will be achieved by:

- i) conducting tours and field-trips of villagers (men and women) to see research stations;

- ii) conducting short adhoc training courses for progressive farmers;
- iii) clean-up campaigns;
- iv) publishing a newsletter in local language;
- v) holding village meetings;
- vi) conducting a demonstration programme;
- vii) individual contacts with the villagers; and
- viii) use of visual aids such as specimen, posters, etc.

(m) Group Action: It is important that villagers join together and organise group action for certain functions such as procuring credit, purchase and distribution of farm inputs such as fertilizers, seeds and chemicals, marketing, etc. Attempts will be made to reactivate the primary cooperatives and to organise other forms of group action through women's clubs and indigenous groups.

IV. The Organisation

A detailed framework is necessary for proper implementation of plans and ideas. One has to exactly know who does what and when, who is responsible to whom and where to go for supplies

and who will arrange them. These are the very crucial organisational problems to be solved in any project.

With the limited resources and manpower in the project, it was thought not to create a new organisation to take care of the organisational problems. The project needed, and even planned to rely on the existing government departments for providing some of the services such as supply of seeds and fertilizer, providing credit, financing self-help projects, etc.

In the government organisational set-up, the problem of coordination of services of different departments at village and regional level is not given due attention. Field and divisional staff of different development departments report vertically to their own heads and work in isolation. This leads to misallocation of resources, duplication of work, and makes the local planning operation much more difficult. It was thought, therefore, to develop organisations at village and regional levels to coordinate the programme activities.

V. Strategy and Techniques

1. Evolution of a Strategy for Development

The strategy for agricultural development used in the project is based on two major parameters: equilibrium - disequilibrium and clientele participation-nonparticipation in

2/
decision-making and execution. The priority on the parameter of equilibrium-disequilibrium was given in view of the specific situation in rural Nigeria where the communities have their forces equated so well, and thus neutralized that a state of near perfect equilibrium exists. The rural people in this situation are only apparently happy because they are fatalistic. They are over cautious about any alterations in the system because the approaches and outcome of past government directed attempts to modernize agriculture were not so satisfactory. They seem to have reservations in what the governments can do through their change functionaries. The change agent's task in such circumstances is to create some state of disequilibrium and, in the process, cause the rural society to seek new and higher level of aspiration.

The second parameter of clientele participation-nonparticipation is more significant in the present set-up of agricultural administration in Nigeria. Burdened with the legacy of colonial rule the Nigerian agricultural administration is characterised

2/ A more detailed discussion on this strategy written by A. U. Patel and J. A. Ekperc is accepted for publication in the book Readings in Extension and Communication: A Cross-Cultural Empirical Base for Planned Change, to be published by the Department of Agricultural Extension, University of Queensland, Australia.

by centralization or client - nonparticipation at different levels. Farmers as a client group of government have probably received inadequate attention in the conventional public administration. The administrators have made very little effort to identify themselves with the people, with the result that the latter view their activities with distrust and suspicion. The centralized systems were easy to institute and operate under the colonial administration. However, now it is important to evolve decentralized or clientele - participation and development oriented agricultural administration. The small family farms in Nigeria are faced with a multitude of constraints related to labour, input supply, credit, marketing, storage, technological choice and transportation which lie beyond both their innovative capacities and their ability to initiate effective problem-handling processes. Under these conditions it seemed that the administrative and organizational systems which combine both the clientele-participation and government direction and supervision would offer the best chances for progress with satisfaction as illustrated in quadrant A of Figure I.

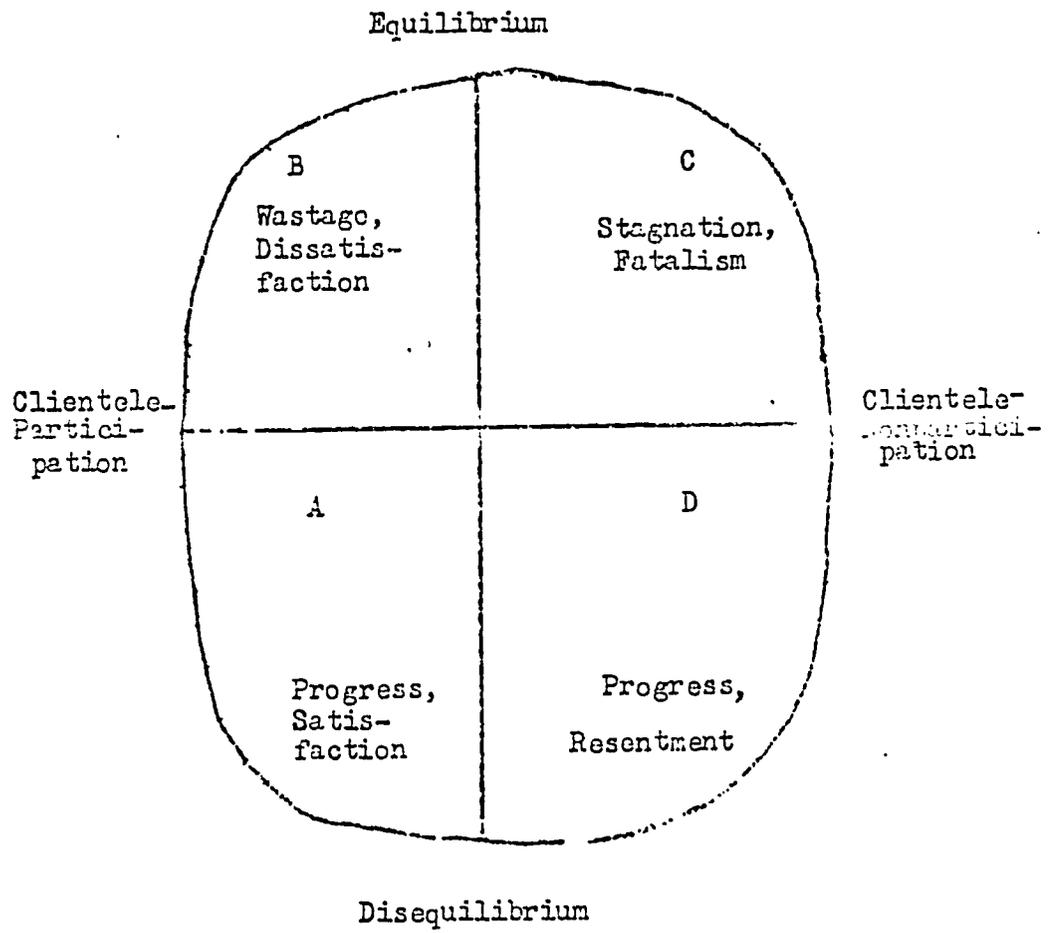


Figure I: Parameters of the Strategy for Agricultural Development

The introduction of clientele-participation approach might slow down the problem-handling process in the beginning, but development will be faster once the clientele gain experience of problem identification and decision-making processes.

2. Local Participation at Village Level

In the beginning the Badoku farmers wanted the project staff to work for them to procure improved seed, fertilizer and chemicals for maize production. The farmers were motivated to use these inputs after seeing the successful results of a maize demonstration in Badoku village in 1970. They said they would like to buy about one to two kilograms of seed and five to eight kilograms of fertilizer as a trial on small plots. This trial stage was encouraged and 37 out of 275 farmers of the village wanted to buy 80 kilograms of seed and 15 wanted 227 kilograms of fertilizer.^{10/} However, they said that they would not take trouble of going individually to the town 18 miles away to buy this small quantity of inputs. Consequently, the project staff arranged for the purchase and distribution of

^{10/} Since the bench-mark survey conducted in the same year revealed that only eight farmers had previously used improved seed and fertilizer, the impact of the first demonstration seems remarkable.

the inputs with the condition that, if as a result of the successful trial their demand for the inputs increased next year, they would agree in future to develop their own system for the supply and distribution of the necessary inputs.

The farmers' trial of the seed and fertilizer was successful and, as expected, their demand for seed, fertilizer and spraying chemicals increased. They also wanted credit for buying these inputs. They wanted project staff to work for them for all these activities, but this request was politely refused. Instead, they were encouraged to develop their own system.

At this stage the farmers thought of two ways of handling this problem:

- (a) Through forming a registered primary cooperative society; and
- (b) Through utilizing their existing indigenous informal group.

They rejected the idea of forming a cooperative society because they had seen many cases of unsuccessful and inactive cooperatives in that area. When they proposed to utilize their indigenous informal group the project staff encouraged them to do so. The farmers then gave their indigenous group

a new, more attractive name: Binukonu Cooperative Society (unregistered), and expanded it to include 81 members in 1971.

These indigenous informal groups in rural areas are usually found among the Yoruba people of the South-Western Nigeria. The most common groups found in Yorubaland were: The Aro - a mutual help association of those engaged in agriculture for lending to individual members the collective help of the remaining members; the Esusu society, which still flourished today, has for its purpose the saving of money by members for a fixed period of time; and convivial associations or age grouping such as Egbe and Otu.^{11/} The Egbe ministered to the traditional desire of the Yoruba for gregariousness, good fellowship and mutual assistance. The indigenous group that existed in Badeku and accepted the challenge for developing an organisational infrastructure for agricultural development had some characteristics of the Esusu and Aro.

The Binukonu cooperative society (unregistered) of Badeku applied for a loan, bought improved seed, fertilizer and spraying chemicals and marketed their cocoa as a group. Thus, the

^{11/} N. A. Fadipo, The Sociology of Yoruba - Ed. by F. O. Okodeji and O. Okodeji (Ibadan: Ibadan University Press, 1970), p. 256.

former indigenous group became involved in modern agricultural development activities, while still maintaining its original leadership structure and group organisation, group maintenance and record keeping procedures. Since the farmers were free to make decision, plan and implement activities, they preferred to maintain their traditional group processes and still benefit from the modernization of activities. Observing the success of the first group, another indigenous group in Badeku and two in neighbouring villages initiated similar agricultural development activities during the next year. When the PPRD was expanded to 18 villages in 1973 and later to 26 villages in 1975, the indigenous groups in all the villages applied for loans, purchased inputs and stored and marketed maize, and a few groups even began to market cocoa as a group activity. Thus, the PPRD demonstrated that:

- a) These small scale, mostly illiterate farmers participating in indigenous groups (under the guidance of extension personnel) are capable of decision-making, planning and implementation of agricultural development activities which contribute to their welfare; and
- b) The indigenous groups which existed in Yorubaland could be encouraged to provide a village level organisational infrastructure for agricultural development.

3. Local Participation At Area Level

One of the problems faced when the project was expanded to 18 villages was the coordination of the credit, input supply, marketing and communication processes in all villages. The credit, agricultural and cooperative staff in the area worked more or less independently and there was no one specific agency to coordinate their activities at village, area and divisional levels. This constraint was discussed with the leaders of village groups and an idea of starting an Area Planning Council (APC) was put to them. The leaders discussed this idea in their respective indigenous groups, and all the groups in 18 villages agreed to participate in APC. Accordingly, two APCs were formed in the two areas of the project in 1974.

The farmers decided to convene these meetings every month at a central point in both areas. They also decided that every village should send at least two representatives to the monthly meetings, and that the local agricultural extension, credit and cooperative staff should also be invited to attend the meetings. In line with these basic policy decisions, APC meetings have been regularly conducted. The agenda evolved through experience includes prayer, taking attendance, villagewise reports on activities and problems of each group during the previous month, reports by credit and cooperative staff, reports from the project

staff, discussion on common problems of input supply, credit, marketing and training, and plans of action for the next month. The farmers are very punctual in attendance and the usual duration of the meetings is about two hours. The representatives of the village groups convey the decisions of APC to their members.

One of the reasons for the success of APC is that during the discussions the project staff and government officials allow the farmers to speak freely and comment on the activities without reservation. Many times, the credit, agricultural and cooperative staff have been severely criticized in these meetings for not being able to perform some of their duties as decided in APC. Such criticism by small farmers would have been unimaginable without the democratic atmosphere in the meetings. No one person is appointed as a Chairman in the meetings. However, one elderly and progressive minded farmer is recognised as the chairman without being formally appointed for the job. The decisions are taken unanimously after discussion to the satisfaction of all the representatives, without voting. The farmers talk in the meetings as they talk in their indigenous groups in their villages. The farmers have now realized that APC is their own organisation and that it is in their interest to keep it going and to expand its functions. The PPRD thus demonstrated

that the representatives of indigenous groups of small farmers are capable of participating in APC meetings for decision-making, planning and implementing agricultural development activities at the area level.

4. Process for Change in Agriculture

Based on the general development philosophy described in the above section, a more specific process for change in agriculture is evolved. As illustrated in Figure 2, this process involves eight steps as follows: problem identification, finding solutions, adaptive trials, extension education, legitimation, contractual services for trials by farmers, developing organization for planning and action, and evaluation.

(a) Problem identification: A bench-mark survey was conducted for determining the situation and identifying general problems. Specific short surveys are also conducted occasionally. Scientists are invited to see crops when there is a problem.

(b) Finding Solutions: Solutions to technical problems are solicited from the scientists. For this purpose, the agricultural scientists of the University of Ibadan, Institute of Agricultural Research and Training, the International Institute of Tropical Agriculture, and the Nigerian Stored Products Institute are consulted continuously.

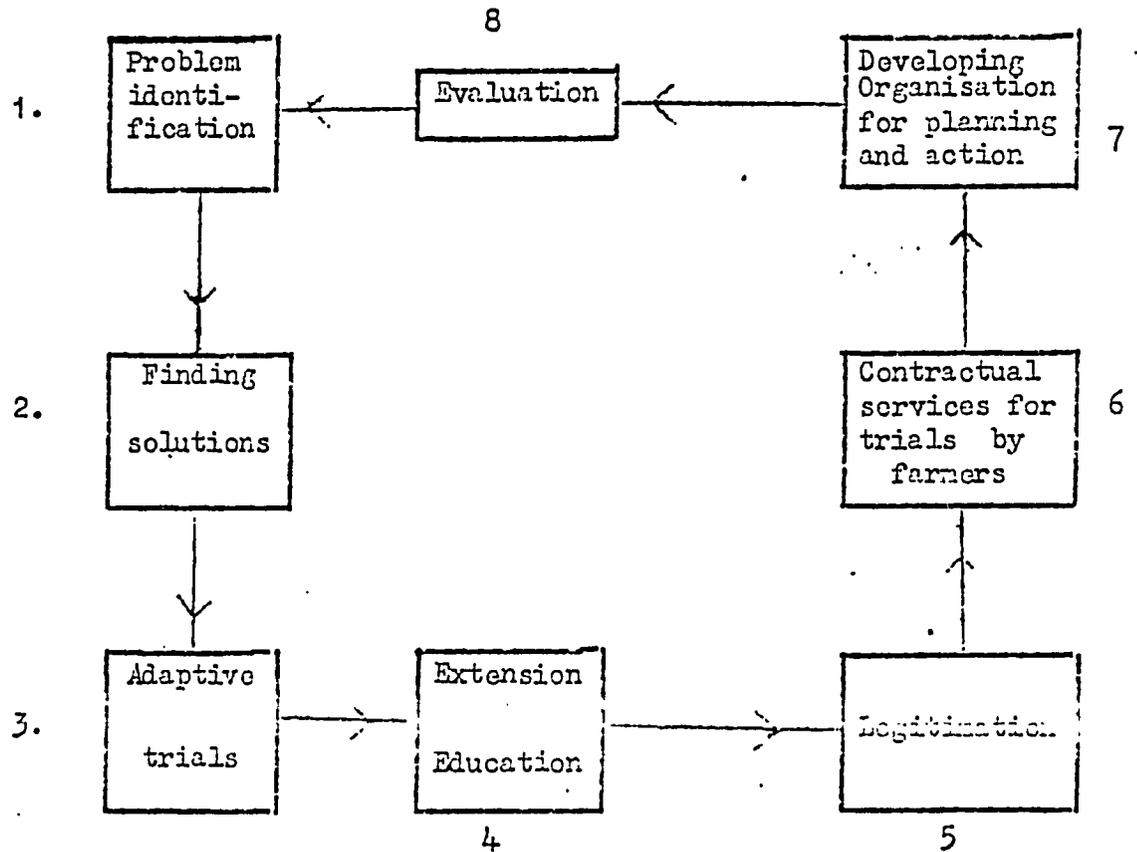


Figure 2. Paradigm of the process for Change in Agriculture

(c), Adaptive trials: Once a scientist thinks a solution based on sound research is available to a problem, one or more adaptive trials are conducted in villages on a small scale. The purposes of the adaptive trials are as follows: to test whether the research recommendations are technically effective in village situation; to provide the extension assistants with the opportunity to learn new recommendations; to know the reactions of the farmers; to study the profitability of the recommendations; and to provide

the scientist with the opportunity to learn the problems arising in the application of recommendations. The trials also serve as demonstrations to the farmers.

The responsibility for planning these trials rest with the scientists, and they or their colleagues visit the plots at important stages. The extension staff execute the routine activities under the guidance of scientists.

So far, adaptive trials have been conducted on maize production, sweet potatoes, soyabeans, cowpeas, storage of maize and cowpeas, and use of herbicides.

(d) Extension education: Farmers are educated by using varieties of methods to convince them of the superiority of innovations. The method used frequently in the project is the village visit. During the village visits, farmers are contacted individually. The officials of the village indigenous groups are educated in the beginning, and they in turn inform their members.

Before the planting season, the general meetings of indigenous groups are attended by the extension assistants and training is imparted on the recommendations.

Field-trips are also arranged to show the adaptive trials. A special field-trip is also arranged once a year to show the farms of University and International Institute of Tropical

Agriculture to the leaders of groups.

A two-day training programme is arranged every alternate year for the leaders of groups on the campus of the University.

The monthly meetings of the Area Planning Councils are also used as training for representatives of groups.

A newsletter is published in Yoruba every three months, and is distributed free to the farmers. Office calls by farmers is also quite an important method. Representatives from about three to five villages visit the project staff every month on the University campus for purposes such as credit, marketing and inquiry on technical problems.

Every indigenous group is encouraged to grow maize and other crops on group farms by their group efforts. These group farms are supervised more intensively by the extension assistants. Thus, the group farms serve as excellent training place.

(e) Legitimation: This is achieved through indigenous groups at village level and the Area Planning Council at area level. Since the adaptive trials are usually conducted on the plots selected by the groups and/or village leaders, all members feel that innovations have the group sanction.

(f) Contractual services for trials by small farmers: It has been observed that, though the farmers are convinced of the superiority of innovations by observations on adaptive trials,

most of them do not immediately adopt them. The reasons for immediate nonadoption are that still they want to try those innovations on a small scale on their private fields and for the purchase of the resources in small quantity they do not like to travel about 15 to 25 kilometers, because those resources are not available locally.

On such occasions, the project staff arranges for these services on contract basis, that is the project buys the resources and distributes or applies on private fields. The farmers pay for these services, though on subsidised rate. While organising these services the project staff puts a condition that the farmers, if satisfied with these small trials, will have to organise the service through their own indigenous groups. The farmers do accept this condition. By this arrangement, the indigenous groups have been successful in organising the services for the purchase and distribution of improved seed, fertilizer and spraying chemicals for maize and cowpeas. Thus, the step of contractual services for trials by farmers is identified as a very important step while working with small farmers in developing societies.

(g) Organisation and evaluation: As discussed earlier, the indigenous groups at village level and APC at area level have been

found quite effective as organisations for planning and action.

Evaluation is a continuous process in the project. It is done through the Advisory Committee of the project, indigenous groups, APC and occasional special surveys.

VI. The Problems and Solutions

1. Technological and Physical Constraints

The major crop of emphasis is maize in both units of the project. In the Egbeda unit, land availability and level of fertility is a major problem - particularly minor elements; zinc, sulphur and magnesium. While rainfall may not be too much of a problem in the Egbeda unit, moisture supply is a major determinant of planting date and yields in the Fashola unit. Spear grass (*Imperata Cylindrica*) is a menace.

The land problem in Egbeda is being solved through continuous cropping of maize, but at the detriment of fertility which is by itself being tackled through corrective high dosage of fertilizers and minor elements. The spear grass problem is being experimented with through tractor ploughing, herbicides and cover crops.

Weed control is another major problem. Stumps of trees and other perennial weeds in the forest zone produce growth of leaves

which is difficult to control by herbicides. In the savannah zone, once the spear grass is controlled by tractor ploughing, herbicides are found quite effective on adaptive trials. This year, about 60 acres of maize are sprayed with herbicides. The use of herbicides can be increased by subsidising herbicides and special ultra-low-volume sprayers which do not require much water for spraying.

2. Labour as a Constraint

Labour is a major constraint in the project area. Rural wage structures are least attractive even to rural housewives at planting and harvest seasons. Most migrant labour also bypass these rural areas to obtain unskilled jobs in the urban construction industry where wages are much higher.

Measures such as tractor ploughing and controlling weeds by herbicides and improved hand drawn implements are tried and the results seem to be encouraging.

3. Institutional and Infrastructural Constraints

(a) Organisational Infrastructure: At the village and the regional levels, one of the major problems was that of developing village and area level organisational infrastructure that could take up the responsibility for planning, implementing and supervising agricultural development activities. At village

level, since the villagers did not show much interest in re-activating primary cooperatives, this problem is being solved by modernising the indigenous groups which serve as pre-cooperative bodies. At area level, Area Planning Councils have been organised for this purpose. Now the problem is to encourage these groups to tackle the problems not only of agricultural development, but also of rural development.

(b) Coordination of services of different departments and agencies:

The field and divisional staff of different development ministries usually do not meet for planning and implementing a coordinated approach to rural development, they work in isolation. Consequently, the villagers are confused when different development personnel contact them. This problem is solved by inviting the local development personnel in the meetings of the Area Planning Councils, and encouraging them to work through the village level indigenous groups.

(c) Supply of farm inputs: The main problem in the supply of fertilizers is that of transportation. The ministry has big trucks which carry a load of six tons, and usually transport it at no cost to farmers. But the demand of individual villages is less than six tons. Consequently, the trucks cannot supply fertilizers to the villages. The fertilizer agents do not

arrange for the transport. This creates a big problem. In the project area, the fertilizer is stored at a central place, and then it is transported in a project vehicle. Other inputs such as improved seed and plant protection and storage chemicals are also transported through the project vehicle.

Another problem about the promotion of fertilizer use is that of relatively a big size of bag. A bag weighs one hundred weight. Individual farmers who do not get credit for private farms cannot buy a big bag at a time. The project experimented by repacking the fertilizer in small bags of one kilogram each. There was a great demand for this on cash payment. Now the project has given five big bags for sale in few villages, and that amount will be used as a revolving fund.

(d) C r e d i t: For the present, the State Agricultural Credit Corporation provides the credit to the indigenous village groups for early maize group farms. However, the credit is not released in time because of some procedural problems. Moreover, it does not give loan for late maize because of uncertain rainfall in the late season. The farmers, therefore, save fertilizer from the early crop and give it to the late crop. The farmers have to make many trips to the divisional office before they get the credit.

The Corporation gave credit to the original Badeku group for onlending to the members. During the first year they returned the loan. But during the second year, the group got more than required loan, and could not return the entire loan. It has yet to pay about 40% loan. Because of this bad example, other groups are not given credit for onlending to members, but next year, few groups will apply and will be recommended for getting a limited amount.

As seen from the data in Appendix - 1, it is clear that since the beginning of the project all groups have been getting credit for the maize group farms every year. The repayment rate of this credit is highly satisfactory.

(e) Marketing and Storage Of Maize: Traders will not buy wet maize harvested in August because of continuous cloudy weather till November. Therefore, the farmers were taught to construct cribs with improved ventilation and use insecticide in it. By this way they can store for 3-4 months and can get about 30% more income by storage. However, the price reaches its peak in May/June.

The Egbeda Area Planning Council tried a scheme in 1974/75 by which the Cooperative Union stored about 90 tons of maize from December to June/July in a store house by using fumigants.

When the farmers brought maize in December, they were given 75% of the then market price from which the groups refunded their loan. The remaining 25% and profit from storage was given to the farmers. However, the profit was not much because of the high overhead cost of storage equipment. There was no proper storage house, therefore a lot of amount was spent in constructing a temporary structure. Moreover, the manager of the cooperative union did not find time to supervise the entire process. The project staff had to supervise everything. Another difficulty was that traders were not ready to buy such a large quantity at a time. Because of these problems this scheme was not repeated in 1975/76, but the individual village groups could sell maize, though few bags at a time, and few groups sold to poultry farmers.

4. Constraints in Livestock Production^{12/}

In the humid tropics, high rainfall and temperature are limiting factors for livestock production. Another factor is that of diseases. Chick mortality between hatching and three

^{12/} Summarised from a report prepared by Mr. R. W. Matthewman who supervises the livestock activities in the project area.

months of age is estimated as high as 90%, while adult mortality in chickens is as high as 30%. In sheep and goats, mortality rates are also higher. The livestock in villages are mainly free range scavengers. In humid tropics nutrition does not seem to be a problem in the present system, but it becomes more of a constraint when increased production is considered.

The livestock development activities are only recently started in the project area, and they are still at trial stage by few farmers.

13/
5. Constraints in Women Welfare Activities

Village women complain about the shortage of water for drinking and other household jobs during the dry season. The State Water Corporation cannot provide grant for constructing deep wells in all villoges. Perhaps a simple technology for digging the well which the villagers can use without much outside help might be more useful. But such technology is not available. Education among women is less than that of men. Women and men hesitate to join in the clean-up campaign. Only children join. Women also extract palm-oil, and make gari from

13/ Summarised from a report prepared by Mrs. C. E. Williams who supervises the women welfare activities in the project area.

cassava and sell in the market. Their palm-oil extraction and gari making processes need improvement, but simple improved technology is not available. Women are now encouraged to grow their own cassava as a group project. There is encouraging response on this activity from the Fashola unit women.

6. Constraints in Health Improvement^{14/}

For constructing the pit latrines the project gives subsidy for making the top cover slab from cement. Villagers have to dig the pits with their own labour, but they do not have the skill to dig deeper pits. Therefore the work is slow.

Medical records on the past health activities are not available at the health centres. Village women still strongly believe in native medicine and the traditional midwives. A proposal was made to train traditional midwives for few days, but they did not show interest. When the women are busy in the season of palm-oil extraction and gari processing, it is difficult to get their cooperation in any health activity.

Shortage and availability of drugs is another difficulty.

^{14/} Summarised from a report prepared by Dr(Mrs.) A. Oyemado who supervises the health activities in the project area.

The project initially provided drugs for common illnesses, and the amount recovered from the villagers is used as a revolving fund. Transportation is a great constraint for the movement of the nurse.

VII. Finances and Staff

Since this project is run by the University as an action research project in relatively smaller area, and not meant to replace the government extension service, the financial requirement is limited. From 1970 to 1973 there was only one village in the project, and on an average the recurrent expenditure was about ₦400 (₦1.00 = about \$1.6) per year. This does not include the salary of one junior field staff who was working full-time.

The project was expanded by the end of 1973. More villages could be included in the project, because of the financial support from the Rockefeller Foundation and the State Ministry of Agriculture seconded four trained junior agricultural extension personnel whose salary is paid by the Ministry. The project employs one graduate junior research fellow and one trained nurse. For data collection, interviewers are temporarily employed when needed. After the expansion, the expenditure was as follows: ₦12,224 during 1973/74, ₦11,559.00 during 1974/75, and about ₦22,000.00 during 1975/76 (this expenditure is comparatively more because one vehicle was involved in an accident

and another (costing ₦6,500.00) had to be purchased, and one post-graduate student was given a scholarship of ₦2,000.00).

It should be mentioned that this expenditure does not include the salary of six senior staff (lecturers) of the University who spend a part of their time for supervising different activities of the project.

VIII. Results and Implications

The project, after extension, has completed only three years of operation. Therefore, it is too early to measure the impact. It is now six years since the project was started in Badeku village. During this period, two surveys were conducted in Badeku, the bench-mark survey in 1970 and the other in 1974 when the project was expanded. The comparative figures for some items are given in Table 2.

In addition to the tangible benefits to villagers there have also been important intangible benefits. The villagers have now developed pride in their indigenous groups and there has been a positive change in attitude and spirit. A new feeling of self-confidence and desire to move forward is clearly discernible. They now feel they are partners in the activities which shape their own destiny.

Table 2: Use of Certain Agricultural Practices in Baduku
Village in 1969 and 1973

Practice	% of farmers who			
	Heard about it in		Used it in	
	1970	1974	1969	1973
1. Fertilizer	68	98	3	67
2. Improved maize seed	61	98	3	70
3. Improved Cowpea seed	*	83	*	16
4. Spraying insecticide on maize crop	*	94	*	53
5. Maize as sole crop	*	96	*	31
6. Storing maize by using insecticides	*	92	0	24
7. Loan from Credit Corporation	*	*	0	22
8. Construction of crib with improved ventilation for storing maize	*	*	0	(Five cribs)
9. Planting late maize in August instead of September	*	*	3	73
10. Spraying cocoa trees	*	*	71	82

* Information not collected

** Two of the five cribs constructed by groups, each with a capacity of 8 tons.

The progress data after the expansion of the project is given in Appendix 1.

The Ministry of Agriculture and Natural Resources has greatly benefited through this project. The Ministry now becomes aware of certain problems of administration, fertilizer distribution, marketing, etc. much earlier, because the project staff communicates them directly to the headquarter. The Ministry now holds monthly divisional meetings of representatives of the Ministry rice and maize group farms, which are in line with the project Area Planning Councils. Certain technical innovations which are found successful in the project adaptive trials are adopted by the Ministry in regular extension service; the important among these are the minimum tillage for maize and cowpea cultivation, improved variety of maize and storage of maize in cribs.

The Agricultural Credit Corporation has learnt the problem of small farmers credit through this project. It also experiments new credit policies in the project area.

The impact of the project activities can be judged indirectly from the fact that the project staff were invited to give seminar on the project activities by the Agricultural Credit Corporation, Institute of Agricultural Research and Training of the University of Ife, and International Institute of Tropical Agriculture.

The students and scientists have also benefited greatly

through the project. The students of the Departments of Agricultural Economics and Extension Services are taken on field-trip to villages. Nearly two to three scientists visit the project area every month during the planting season. Two to three final year students collected data for their class project from the project villages every year.

The project experience suggests that the State Government can accelerate agricultural development by arranging mobile depots to sell fertilizers, improved seeds, plant protection chemicals, farm tools and herbicides nearer to the villages. These mobile depots can arrange sale on periodical market days in primary markets which are held almost every 10 to 15 kilometers and are connected by motorable roads. However, these inputs should be put into smaller packages, each costing about ₦0.50. The government may also help by purchasing maize at a fixed price. Plant protection chemicals, farm tools and herbicides may be subsidised for rapid food production. Another change that will help agricultural and rural development is to coordinate all agricultural, health, education, community development and rural industries services at village and area levels. Involvement of villagers will help a lot in such coordination backed by realistic planning.

To summarise, it can be said that the Pilot Project on Rural Development has demonstrated that accelerated agricultural development can be achieved provided the right technology is available; scientists are involved in adaptive trials; farmers participate in planning and execution of the programme at village and area levels, services such as extension education, production credit, cooperatives, inputs and marketing are co-ordinated at village and area levels; and contractual services are arranged for trials by farmers at subsidised rate.

APPENDIX - I

PROGRESS DATA OF THE BADEKU EXPANDED PROJECT

Items	Egbeda Unit			Fashola Unit		
	1974	1975	1976 [*]	1974	1975	1976 [*]
1. No. of villages	14	12	17	4	10	11
2. No. of indigenous groups.	15	16	23	4	12	14
3. Maize acreage under group farms	107	72	87	63	147	169
4. Herbicides sprayed on maize (acres)	0	0	0	0	0	60
5. Insecticides sprayed on cowpeas (acres)	0	0	0	0	0	5
7. Use of fertilizers (in bags, each of 50 kg.)						
15-15-15	0	380	110	0	296	324
25-10-0	0	190	50	0	148	200
21-0-0	100	0	110	100	0	324
T.S.P.	45	0	0	34	0	0
8. Loan given by Credit Corporation in ₦	4074	6729	3940 ^{2/}	1908	6035	9380 ^{2/}
9. Loan due in ₦	Nil	3440 ^{1/}	-	Nil	275	-
10. No. of demonstration in agriculture:						
Maize	1	1	10	0	1	10
Cowpeas	3	1	-	3	2	-
Limabeans	1	1	-	0	0	-
Cassava	0	1	-	0	1	-
Maize/Cassava	0	1	1	0	0	1
Pigeon peas	1	0	-	1	0	-
Sweet potatoes	2	0	-	2	1	-
Fertilizer application	13	16	-	4	10	-
Herbicide	1	0	-	0	-	-

* Till June, 1976

1/ Most of these dues are owed by only one group (Baduku) which received it for on-lending to members. This group has invested most of this amount in buying two vehicles, one for passenger pick-up and the other a truck. These vehicles serve the entire village. It also buys fertilizer for villagers.

2/ This loan includes only first instalment.

I t e m s	Egbeda Unit			Fashola Unit		
	1974	1975	1976	1974	1975	1976
11. No. of home-economics demonstrations:						
Maize recipe	0	1	-	0	0	-
Cowpea recipe	0	3	-	0	0	-
Gbegiri recipe	0	1	-	0	0	-
12. No. of Women's Clubs	1	2	2	0	0	4
13. Women's cassava group farms	0	0	-	0	0	4
14. Construction of Community Hall by Women	0	0	1	0	0	-
15. Health activities:						
Demonstrations/lectures on wound treatment	0	0	4	0	0	1
Pulling drinking water	1	0	10	0	0	5
Breast feeding	0	2	8	0	1	2
Teeth Cleaning	0	2	4	0	0	2
Washing of infants	0	4	4	0	0	2
Environmental sanitation	2	2	6	0	0	4
Care of umbilical cord	0	0	5	0	0	2
Causes of malnutrition	0	0	12	0	0	4
16. Meetings with native midwives	0	0	4	0	0	1
17. Vaccination:						
S.P.	0	150	-	0	0	-
T.B.	0	360	-	0	0	-
D.P.T.	0	160	26	0	0	-
Polio	0	166	26	0	0	-
B.C.G.	0	0	599	0	0	-
Measles	0	0	92	0	0	-
18. No. of villagers trained on University campus:						
Farmers	46	5	-	0	11	-
Youth	0	13	-	0	0	-
19. No. of villagers on field-trip	188	55	-	0	30	-
20. No. of youth clubs	1	4	4	0	1	1
21. No. of Area Planning Council Meetings	11	12	5	11	12	5