

**SOCIAL AND ECONOMIC EFFECTS OF STATE FARMING:
EXPERIENCE FROM BENDEL STATE OF NIGERIA***

P.O. Agbonifo
Centre for Social, Cultural and
Environmental Research
University of Benin,
Benin City

Abstract

To meet the requirement on food, in 1972 the Bendel State Government took a giant step in the direction of state farming by establishing some large-scale farms. These mechanized farms were also expected to provide the needed demonstration effects which would hopefully result in the adoption of modern techniques by farmers. In what is to follow the differential effects of two State Farms, the Agbede and Warrake Farm, are analysed. Using a combination of methods on a total sample of 319 farmers and State farmworkers data are presented to show that the Farms made both positive and negative impact on rural life. Specifically, the analysis indicates local elites as the major beneficiaries.

Introduction

This paper examines the differential effects of two State Farms in Bendel State of Nigeria, — the Agbede and Warrake Farm. One of the objectives is to identify the real beneficiaries of development projects like the farm projects. Another is to determine whether there exists a tight network of relationships among them. The existence of such a network would imply that useful information will tend to circulate mainly among members of the group.

Many recent analyses of agriculture in both developed and developing nations have demonstrated that the introduction of technological innovations,

* This is a part of a larger study of two State Farms in Bendel State of Nigeria.

particularly mechanization, tends to differentially benefit various sectors of rural society (Thiesenhausen, 1971, 1975; Chenery, 1974; Dorner, 1971, 1972; Barnett, 1975; Frankel, 1971; Ul Haq, 1972; Yudelman et al., 1971; Perelman, 1977), and to result in a new social formation (see Chaveau, 1980; Klein, 1980).

The big farmers are better equipped with financial resources, and are socially closer to government and political leaders, often have the required collateral for credits and constitute part of the local social elites (Frankel, 1971; Yudelman et al. 1971; Perelman, 1977 and Barnett, 1975). For example, Agbonifo (1974), Agbonifo and Cohen (1976) in Nigeria, Frankel (1971) in India, and Barnett (1975) in the Sudan have shown how traditional leaders through fair and foul means channel the benefits accruing from mechanization into their own pockets. The methods employed by them range from outright ejection of smaller farmers from their holdings to direct expropriation of physical yields or cash receipts, e.g. under sharecropping arrangements (see Forman, 1975; Wolf, 1966; Yudelman et al., 1971; Agbonifo and Cohen, 1976). Another way by which the upper strata of the community benefit is through their ability to take advantage of the paraphernalia of technological process, e.g. the tax holidays or tax rebate, and waiver of import duties on farm machinery (Myint, 1971, and Yudelman et al., 1971).

In the early part of the last decade, the Bendel State Government took a giant step in the direction of State farming by setting up a number of fully mechanized, large-scale farms. Among these are the Agbede Farm, which commenced operation in August 1972, and the Warrake Farm which was started in 1974. The farms were established out of the realization that peasant farming alone could no longer solve the problem of food production in the face of increasing population and rising food costs. Furthermore, these, mechanized commercial farms were expected to provide the needed demonstration effects which would hopefully result in the adoption of modern techniques by farmers in the localities. In a sense this can be seen as an indirect way of attempting to increase food production, while improving the standard of living of the farmers at the same time. How far have these hopes been realized?

This and other questions were examined in a larger study which provides data for this paper.

The Inception and Organization of the Programme

In 1971 the Bendel State Government through Executive Decision set up a food company to run large-scale mechanized farms. Contacts were made with the respective village heads in the various potential locations

and asked to provide lands for government projects. These village heads who did not properly comprehend the scope and nature, as well as the possible impact of the projects, were to explain Governments's intention to their people. These community leaders requested their people to give up their farm lands and plantations. Hopes were raised out of proportion: huge compensation, the people thought, would be forthcoming. While the village heads and some important persons in the areas were briefed on the issue, no direct contacts were made with the ordinary farmers, who were to be most affected by the projects. The political heads and their next in rank were simply assumed to be the most efficient point of entry into the community. That might be right. However, it could also be the most improper entry, as it was in this case, where a possibility of a "cloudy deal" exists.

A solution to the problem of getting the relevant farm machinery and other equipment was temporarily found in the decision to bring in a German agricultural equipment manufacturing company, Imex Rau.

The contract with Imex Rau was for 2 years in the first instance, but was renewed in 1974 and formally ended in 1976. Warrake Farm was established on January 20, 1974, but could not come under Imex Rau. It was under the Ministry of Agriculture, and later managed by various Boards set up by the State Government. Agbede Farm was brought under the Board (Bendel Food Production Board) in 1976 when Imex Rau left. Thus, while Warrake Farm was right from the beginning fully managed by Nigerians, the Agbede Farm became so only since 1976.

The total land areas acquired, or donated are 6,000 and 5,200 hectares for Agbede and Warrake farms respectively. Of the 4,000 hectares earmarked for active cultivation in each of the farms 1,500 hectares (or 37.5%) at Agbede and 1,200 hectares (or 30%) at Warrake were in use.

At the top of the hierarchy and responsible only to the State Government, which normally appoints its members, is the Board of Directors. The executive functions of the Board are conducted by the General Manager. All decisions affecting the State Farms are the prerogative of the Board. The operations of the farms are directly under the farm manager. The operations are grouped into three major categories: the administration under the assistant farm manager; the farming section under the farm supervisor, and the workshop under the technical manager (an engineer). The three divisions have various categories of workers. In 1976/77 season Agbede had 220 of these groups of workers and 4 senior staff. During the same period Warrake had 100 of the regular workers, 2 supervisors, 5 foremen, and a time keeper. There has been steady decline in staff strength; at the end of 1979. The total number of staff was 87, or only 38% of the 1976 figure.

Except while Agbede Farm was managed by Imex Rau, supply of farm inputs was by the various defunct Food Production Boards. The farm were heavily mechanized, and at the time of this study many of the machines were lying idle. The productivity of the two farms have been very low and declining. The two major crops are (consumption and seed) rice and maize. The maize was mainly used for livestock. The sales of the product were usually handled by the headquarters of the Board at Benin, the State capital. Thus, as soon as the produce leaved the farms, what happened to it thereafter was unknown to those engaged in the production.

Methodology

The choice of the two State Farms studied was influenced by the fact that te constituted the largest and oldest (each at least five years old in January 1980) of Bendel State Farm projects in Food crop production. Other factors include accessibility by motorable roads and the propinquity of the farms. Both farms produce similar crops; the principle ones are rice and maize.

An initial random sample of 262 local farmers from the two villages was interviewed. As a result of thorough screening of the completed questionnaires, 12 of them had to be thrown out, leaving us with 250 of which 115 were from Agbede and 135 from Warrake. In addition, 20 state farm workers at Agbede and 18 others from Warrake who were present at the farms at the time of the study were interviewed. Data were also collected from 23 elites randomly selected by reputational, positional and decision-making criteria and 8 non-elites. In the analysis we first compared the state farm workers with local farmers, and later those who made some relevant contacts with those who did not.

The majority (47%) of the subjects were between the ages of 41 and 50 years. This agrees fairly well with the figure of 46% for this category in the report of Rural Economic Survey for 1976/77.¹ The mean age was 45 years. The major occupation reported by subjects was farming. About 97 percent of them said they were full-time farmers, and the rest 3 percent were either part-time farmers or full-time craftsmen. As expected only 7.6 percent of the sample population were christians, the rest being moslems. Sixty-one percent had each 2 or more wives, about an average of two wives per person. The largest number of 109 families (37.8%) fell into the category of 6-10 persons. The mean size of family unit was 9.8 persons. Less than half (106 individuals or 36.8%), obtained any formal education. In fact, only 76 (26.4%) of them attained any reasonable educational levels, i.e.

1 Ministry of Economic Development Statistical Division, 1979.

completed or gone beyond primary school. Over 52 percent do not affiliate with groups or association. Of the total sample population 62 (21.5%) and 45 (15.6%) are members of cooperatives and Farmers' Unions respectively. The remaining 31 individuals are members of miscellaneous groups.

A combination of techniques was employed for the collection of data. These range from observational methods (participant and non-participant observation) to the use of structure and unstructured questionnaires and interview schedules, depending on the kind of data and the level within the hierarchy of officials from whom information was obtained. Also a number of statistical methods was employed in the analysis of the data collected. The X^2 was employed to determine any relationships among the variables. In order to examine the thesis that only those who can make the vital contacts through their control of important instruments of production and channels of communication are the potential beneficiaries, a simple network analysis employing matrix algebra² was carried out.

Findings

Several variables were examined to determine the effects of the State Farms on the various institutions, the social and economic life of the community as a whole. An analysis of the effect of network of relationship was also carried out.

Income, Consumption Patterns and Employment of Labour

In order to determine whether involvement in the operations of the farms makes a difference in admitted increase in income and change in consumption patterns, the variable on types of respondents in the sample was crosstabulated with those on income and purchases of consumer goods (durable and non-durable). As Table I indicates a greater proportion of those who work with the Farms, the majority of whom are permanent residents of the two villages, reported increased income. The Chi-square was significant at less than the .001 level of confidence. Thus, the assumption that the farms led to an increase in the income of those involved in their operations is supported. Except in four types of consumer goods, the results show very significant differences in the purchases of consumption items by types of respondents. In each instance, a greater proportion of those involved in the projects have made additions to their consumption items. The results thus show that the farms effect changes in consumption

2 This method is grounded on the Directed Graph (Digraph) theory (White et al., 1976; Boorman and White, 1976, and Harkness, 1976).

patterns of those involved with them. Since all such increases indicate some increase in disposable income, our assumption that the farms are related to increase in income is further supported.

One very important question that needed to be answered was whether there was any relationship between reported increased income and the purchases. In order to answer this question, the variable 'increase in income' was crosstabulated with those on purchases of the various items. As Table II demonstrates, increase in income is strongly related to purchases, except in the case of 'Car' and 'Cigarettes'. These last articles can be ignored since in fact they even constitute luxury goods for most urban Nigerians. The Chi-square values, in many cases, were significant at better than .001 level. Therefore the two assumptions above are confirmed.

However, the above tests only enable us to compare those working on the farms for pay with local farmers with respect to consumption items. There are however others who, though not working for regular pay on the farms, have made other vital contacts with the projects. Excluding state farm workers, respondents who made some relevant contacts were then compared with those who did not. This comparison provides further support for the above assumptions regarding contact with the farm in the manner discussed elsewhere (Agbonifo, 1980). As Table III clearly indicates, only in the four cases was there no significant difference. Two of the cases had no strong association in previous tests, although a greater proportion of the 'contact group' acquired or consumed the listed items. Thus, not only are the assumptions on income and consumption patterns further supported, but also our assertion that only those who can make the contact will benefit from the establishment of the farms is confirmed.

Impact of the Projects on Farming

"Contact with the farms" was significantly related to variables on farming at better than .03 level of confidence. Greater proportion of those who have the relevant contacts with the farms employ more farm hands, have adopted new farm practices and diversified their production. Also variable difficulty of obtaining new farmland was significantly (.03) related to contact with the projects (see Table IV). The interesting result is that a greater proportion of those who have contacts with the farms maintained that it has become more difficult to obtain farmland. This is not surprising. They are the ones who have benefited most from the establishment of the projects in the areas and expanded the range of crops they have been cultivating. Consequently, they require more land for the diversified production. Since land is no more abundant as before, they are the first to feel the impact.

Network of Relationship

The findings presented thus far have greatly supported the assumption that only those who possess certain advantages over others are likely to benefit more from the establishment of the farms. Contact with the farms was significantly related to both consumption and farm practices. The question still to be answered is: who are these individuals with the "vital contacts", and are these contacts due to their involvement in a strong network of relationship? Some of the relevant characteristics are summarized in Table V. As indicated, a greater proportion of the 44 who made the important contacts than those who did not are educated, are members of the two most powerful organizations cooperatives and Farmers' Unions (excluding the newly formed political parties) in the area, and have more relatives living in cities. This support our assumption that they are likely to belong to the elite group and hold memberships in powerful organization. In order to determine the existence of a network of relationship which is mediated by formal organization, we turned to network analysis employing matrix algebra.

Major research on social networks is principally concerned with investigating patterned relationships among different kinds of social units. Irrespective of the level of analysis, attention is usually focused on the linkage patterns among the units of analysis and the consequences of such arrangements on group and organizational activities. The nature and type of pair-wise ties between successive units of analysis, such as individuals, cooperatives and Farmers' Unions, are normally considered. It is common practice in network analyses to present the units of analysis (in the present study individual members of the core elites) as rows and columns of a matrix. The relations among the units constitute the cell entries. Thus, for instance, if a link exists between two individuals A and B, it would appear as a '1' in the cell where column A and B intersect, and so on.

The analysis reported here seeks the presence of interrelationships among the core elites in the rural location of the Farms through the application of the network analytical method. The main objective is to determine if they are tightly connected with the most important economic and social organizations in the area. Control of such organizations through which vital information about Government intentions and possible assistance to rural people is more likely to flow, gives members of this group advantage over others. Network analysis, employing matrix algebra, permits us to examine the interconnections among the community members using cooperatives and Farmers' Unions as mediating organization (see Laumann et al., 1977; Harkness, 1976; Laumann and Pappi, 1973). Since our main sample did not pay attention to the positions, reputation of, and participation in major decision-making by the individuals, we could not

simply apply network analysis to the 44 subjects who made the relevant contacts. We could not be positive that they are representative of the rural core elites, even though they possess the necessary characteristics. A random sample of 23, drawn from a list based on the three elements above, was therefore taken for the purpose. Eleven of these were from Agbede and twelve were from Warrake. As it turned out, 17 of the 23 were also in the main sample, and they all belonged to the group of 44 that we have been referring to as the "contact group". This therefore validates our former result and the present findings below. To make a comparison of the tightness of relations among core elites with those of the common people, ten individuals from those considered very low in rank by community members we talked to were randomly selected. This brought the total number of subjects in the sample from Agbede and Warrake to 16 and 17 respectively.

We coded those who reported membership in either cooperatives or Farmers' Unions in matrix format, which is a counterpart of an incomplete symmetric graph. A '1' appeared where subjects A and B are members of the same organizations, and zeros where no such relationship exists. To determine the existence of a network among the members of the organizations, the matrices were squared. The rationale for the procedure derives from the graph theorem which holds that for an adjacency matrix of a graph, raising the adjacency matrix to the n^{th} power will produce in each entry i, j , the number of sequences of length n from one point in the graph to another. Thus, squaring the described matrix gives on the off-diagonal entries the number of two-length sequences between one individual and another. Thus, appropriate diagonal values, on the other hand, represent the number of cycles of length 2 containing individual members of the selected organizations. Cubing the matrix would have given similar information for sequences of length three (Harary et al., 1965). While the diagonal elements indicate how well linked a given individual is, off-diagonals reveal the number of sequences it takes for an individual to reach another. Therefore, the larger the size of the diagonal element of a matrix, the greater the degree of participation of the individual in a series interaction with others in the group considered. The findings are contained in the Tables. Since we were not quite certain how much interaction existed among the cooperatives and unions in the villages, it was decided to treat the two villages separately. Treating them separately also enables us to see the difference in the tightness of the networks of relationship in the two locations. Table VI indicates that the core elites (Nos 1-11) at Agbede are more extensively tied to each other through sequences of size 2 than they are to other members of the community. There are, however, exceptions, i.e. the cases of subjects 7 and 8 who are not linked to any of the subjects via the considered organizations. The above inference of more extensive ties is based partly on the greater frequency of zeros in the link-ages of the non-

elite group (Nos 12-16). This result indicates that the elites at Agbede belong to a network of relationship through membership in selected (important) organizations. The squared adjacency matrix data for the Warrake group contained in Table VII reveals a much less extensive network of ties among the core elite than we found in the case of the Agbede group. Nevertheless, they are still more extensively tied to each other (subjects 1-12) via sequences of 2 than they are to the group of non-elites. This once more indicates the existence of a network of relations among the elite group. The non-elite do not appear to belong to such a network.

To find out whether the elites are more tightly linked than the non-elites, we now consider the diagonal elements. For a broader picture of the situation in the two villages, the diagonal elements of Tables VI and VII are presented on the same Table. As indicated, the core elites in both villages are more tightly linked to one another and, in the case of Agbede, even to other non-elites. Excepting subjects 1, 2, 7 and 11, all the elites at Agbede are as well or better linked than the non-elites. Subject 10 a retired inspector of education, a Chief, and once a member of the Board of Directors of the State Farms projects, tops the list with 9 sequences. Subjects 3 and 6 both *Alhajis* and village traditional chiefs, who have both played important roles in decisions as members of committees, came second with 8 sequences each. Subjects 5, 8 and 9 (each with six sequences) are next. The case of subjects 8 is interesting. Though not a chief, mallam or Alhaji, is one of the most educated persons in the village and has acted as Secretary to most of the organizations and groups in the area. The cases of subjects 15 and 16 (5 sequences each) are also interesting. Subject 15 is perhaps the oldest man in the village, and 16 is one of the palace 'errand men'. Their age and position (nearness to the Oba of Agbede) respectively, have made them welcome among most groups.

Even though the sequences in the case of Warrake are lower than those of Agbede, the same thing could be said here. It is even more evident that the elites are more tightly connected than the non-elite group. The latter group, in fact, revealed no sequences. Subject 10 at Warrake (3 sequences) is a chief and religious leader who had on several occasions represented the village on issues that needed State Government attention. He is very much respected because of his outside connections. He, and those already mentioned above, were in the "contact group" of 44. The results presented here thus provide further support for the hypothesis that those who control important resources are likely to benefit more than others from the Farms, and that they are likely to be linked in a tight network of relations.

Discussion and Conclusion

While no cause-effect relationship have been proved here, the analysis presented revealed that there exist strong associations between the establishment of the State Farms and recent changes in the rural areas. The associations were mainly in the predicted direction. There has been a dramatic change in the characteristics of the population of the rural area concerned. The establishment of the Farms was significantly related to the increase in income and changes in the consumption pattern of those involved and those who have been able to acquire vital contracts with the Farms. The presence of the Farms has indirectly resulted, to some extent, in increased employment opportunities, not only by directly employing labour themselves, but also indirectly by encouraging greater employment of farm labour among those who diversify production.

The Farms have, no doubt, had some demonstration effects on the farming system. However, the impact is very minimal. As the above analyses have shown, no one adopted the major technical innovations. While sizeable number have adopted the new crops or new varieties, only a few have started applying chemicals. This point gains in importance when it is realized that these new crops can give their optimal yield only if the right kind and quantity of commercial fertilizers are applied to them (see Brown, 1970 Chandler, 1979). This thus tends to detract from the Farms' achievement in this regard. A possible explanation for this situation is the lack of any direct extension service, or any direct contact with the farmers. No conscious efforts have been made to reach the community. Efforts have essentially been on an individual basis, e.g. State Farm workers who lived among the village people.

The Farms also have their minus side. Though proper statistical test proved impossible, sufficient evidence has been advanced to show that the Farm projects lead to shortages in good arable land in the locations. The establishment of the Farms has created a great deal of conflict and contributed to the formation of bitterly opposed group in the communities. The influx of people of differing orientations and a sudden increase in the amount of money in circulation, are associated with some aspects of social disorganization in the communities. Illegal cohabitation, birth of children out of wedlock, challenges to traditional authority, and elopements were reported. It is not, however, being assumed that the establishment of the Farm projects is the primary cause of the social disorganization. Factor in the general development of the country and in the area are also operating. Nonetheless, there can be little doubt that the establishment of the Farms must have facilitated or exacerbated the situation. A major result of the analyses is that the establishment of the State Farms, as was assumed, have tended to benefit only a handful of families. An examination of the social,

economic and political organization in the communities showed the existence of a solid hierarchical order. Analyses of the data demonstrated very clearly that the elites in the village communities are the major beneficiaries of the establishment of the Farm projects there. They, as the big land-lords, profited in terms of rents, and were able to improve their consumption patterns. They are the principal adopters of the new farm practices (seeds and fertilizers) and control or dominate the most powerful organizations which constitute the major channels of information and agricultural assistance (e.g.) cooperatives flowing from the government and other parastat bodies. This implies that the poor people might never be reached, thus making Thiesenhausen's (1978) "Reaching the Rural Poor and Poorest: A Goal Ummet", ever more relevant (see also Ul Haq, 1972). The findings lead to the conclusion that though the Farms made some impact on the rural life in general, the impact has been essentially biased towards the elites in those communities.

Apart from providing a very strong support for the main postulate of this paper, the finding have some implications for both literature and future rural development efforts. There is a need to carefully examine, as some French Marxist anthropologist (e.g. Meillassoux, 1975 Dupre and Rey 1973) have done, the social structure — the network of relations — of the target communities, in order to appreciate how opportunity structures and resources can be manipulated by some fortunate individuals and households to their own advantage. Existing sets of relationships and resources and the reinterpretation of traditional norms and values, such analysis should reveal, often facilitate the seizing of new opportunities-like the State Farm projects (see Dupre and Rey, 1973; Long, 1968). The findings here point to the weakness in theoretical approaches to development that do not permit a closer analysis of the social and economic organization of the target group. They give credence to such approaches that sensitize us to the intricacies not only of the way a particular unit of production is organized, but also the relations among the various units as well as the location of the individuals in that network of relations. We are thus forced to ask the question whether some people are more strategically placed or control a disproportionate part of the resource. Knowledge of this sort can help us in assessing possible effects of a development effort or in designing one for reaching a target group (Thiesenhausen, 1978).

TABLE I

IMPACT OF THE STATE FARM PROJECTS ON INCOME AND
CONSUMPTION PATTERNS: STATE FARMWORKERS AND
LOCAL FARMERS

Items	FARMWORKERS	LOCAL FARMERS	X ²	P
	N = 38	N = 250		
Increased Income	30	64	40.31	.00
Purchased Radio	22	52	21.87	.00
“ Bicycle	12	58	.84	.35
“ Machines	12	82	.00	1.00
“ Car	2	16	.00	1.00
“ Iron Bed	26	35	55.30	.00
Consume Milk	17	67	4.31	.03
“ Sugar	18	52	11.25	.00
“ Beverages	15	63	3.72	.10
“ Cigarettes	7	16	4.95	.03
“ Liquor	9	7	23.58	.00
“ Coffee	5	10	3.90	.05

TABLE II

IMPACT OF THE PROJECTS:
REPORTED INCREASE IN INCOME AND PURCHASES

Purchase	Reporting	Reporting	X ²	P
	Increase N = 94	No Increase N = 194		
Radio	38	36	14.73	.00
Bicycle	38	32	18.43	.00
Machine	41	53	6.93	.01
Car	7	11	.99	.80
Iron Bed	34	27	17.47	.00
Milk	50	34	37.28	.00
Sugar	40	30	23.80	.00
Beverages	45	33	28.99	.00
Coffee	9	6	4.16	.04
Liquor	10	6	5.51	.02
Cigarettes	11	12	1.92	.16

TABLE III

IMPACT OF THE PROJECTS ON INCOME AND CONSUMPTION
PATTERNS: CONTACT WITH THE PROJECTS

Items	Contact group	Non-Contact	X ²	P
	N = 44	group N = 206		
Increased Income	26	38	29.34	.00
Purchased Radio	12	40	.92	.33
“ Bicycle	17	41	6.12	.01
“ Machines	20	62	3.21	.07
“ Car	5	11	1.28	.25
“ Iron Bed	8	27	.41	.52
Consume Milk	24	43	19.27	.00
“ Sugar	17	35	5.44	.00
“ Beverages	20	43	10.35	.00
Improvement in House	6	13	1.82	.17

TABLE IV
IMPACT OF THE PROJECT ON FARMING

Group	USE MORE FARM LABOUR		X ²	P
	No	Yes		
Non-Contact group	100	106	4.54	.03
1. Contact group	13	31		
	NOW USE FERTILIZERS		X ²	P
	No	Yes		
Non-Contact group	181	25	11.42	.00
2. Contact group	29	15		
	GROW NEW CROPS		X ²	P
	No	Yes		
Non-Contact group	119	86	8.99	.00
3. Contact group	14	30		
	DIFFICULT TO GET MORE FARMLAND		X ²	P
	No	Yes		
Non-Contact group	148	58	4.28	.04
4. Contact group	24	44		

TABLE V
SHOWING CERTAIN CHARACTERISTICS BY CONTACT GROUPS

Characteristics	Non-Contact group N = 206	Contact group N = 44	X ²	P
1. Education	56 (27.2%)	22 (50.0%)	7.76145	.0053
2. membership in Cooperative or Farmers' Unions	94 (45.6%)	26 (59.1%)	5.29123	.05
3. More than 5 Relatives in Cities	51 (24.8%)	23 (52.3%)	18.93279	.0003

TABLE VI
SQUARED ADJACENCY MATRIX DATA FOR CORE ELITES AND NON-ELITES: AGBEDE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	1	2	1	1	2	0	0	2	1	0	0	0	0	1	2
2	1	4	3	4	3	4	0	0	3	4	0	0	0	0	4	3
3	2	4	8	4	4	7	0	0	5	7	0	0	0	0	4	4
4	1	4	4	5	3	4	0	0	3	4	0	0	0	0	3	3
5	1	3	4	3	6	4	0	0	5	5	0	0	0	0	3	4
6	2	5	7	4	4	8	0	0	5	7	0	0	0	0	4	4
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	2	3	5	3	5	5	0	0	5	6	0	0	0	0	3	5
10	1	4	7	4	5	7	0	0	5	9	0	0	0	0	4	4
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	1	4	4	4	3	4	0	0	3	0	0	0	0	0	5	3
16	2	3	4	3	4	4	0	0	0	4	0	0	0	0	3	5

DIAGONAL ELEMENTS OF SQUARED ADJACENCY MATRICES
FOR ELITES AND NON-ELITES: AGBEDE AND WARRAKE

Subjects	Diagonal-Elements	
	Agbede	Warrake
Elites		
1	2	2
2	4	0
3	8	0
4	5	0
5	6	1
6	8	0
7	0	0
8	6	2
9	6	0
10	9	3
11	0	2
Non-Elites (Agbede)		
12	0	0
Non-Elite (Warrake)		
13	0	0
14	0	0
15	5	0
16	5	0
17		0

TABLE VII

SQUARED ADJACENCY MATRIX DATA FOR CORE ELITES
AND NON-ELITES: WARRAKE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	2	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	1	0	0	1	0	1	1	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	2	0	1	1	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	1	0	0	2	0	3	2	0	0	0	0	0	0
11	1	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

YIELD PER HECTARE OF RICE AND MAIZE

	1977/78		1978/79		1979/80	
	Rice Tons/ha	Maize Tons/ha	Rice Tons/ha	Maize Tons/ha	Rice Tons/ha	Maize Tons/ha
Agbede	1.55	.83	1.60	1.45	—	—
Warrake	.20	.68	.50	.46	1.16	.22

Source: Records of the two farms.

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