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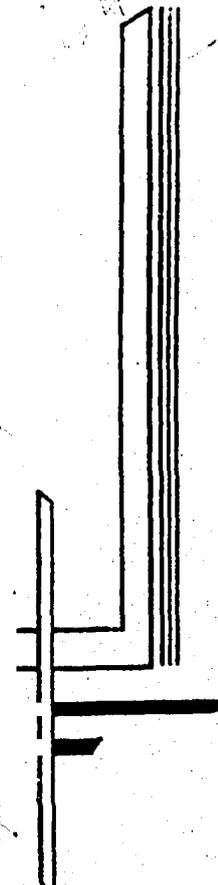
A Plan for Continuing Privatization of the Seed and Fertilizer Industries in Ghana

Prepared for

United States Agency for International Development

by

**International Fertilizer Development Center
P.O. Box 2040
Muscle Shoals, Alabama 35662, U.S.A.**



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Acronyms and Abbreviations

¢	Cedis
¢/\$	Exchange rate – ¢370 = US \$1
ADB	Agricultural Development Bank
AEF	African Enterprise Fund
APDF	African Project Development Facility
APPP	Agricultural Productivity Promotion Program
ARB	Association of Rural Banks
ASRP	Agricultural Services Rehabilitation Project
BHC	Bank for Housing and Construction
BOG	Bank of Ghana
BSP	Breeder Seed Production
CDC	Commonwealth Development Corporation
CIDA	Canadian International Development Agency
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo
cm	Centimeters
COCOBOD	Ghana Cocoa Marketing Board
CRI	Crops Research Institute
CSD	Crop Services Department
CSIR	Council for Scientific and Industrial Research
CSP	Certified Seed Production
DAP	Diammonium Phosphate
DFA	Development Fund for Africa
DRC	Domestic Resource Costs
EEC	European Economic Community
ERP	Economic Recovery Program
ESAF	Extended Structural Adjustment Facility
ESD	Extension Services Department
FAO	Food and Agriculture Organization of the United Nations
FASCOM	Farmers Services Company Ltd.
FSP	Foundation Seed Production
FSRP	Financial Sector Reform Programme
FUSMED	Fund for Small- and Medium-Scale Enterprises Development
g	Grams
GCB	Ghana Commercial Bank

GDP	Gross Domestic Product
GFDC	Ghana Food Distribution Corporation
GGDP	Ghana Grains Development Project
GLDB	Grain and Legume Development Board
GOG	Government of Ghana
GSC	Ghana Seed Company
GSIU	Ghana Seed Inspection Unit
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
ha	Hectares
IABD	Integrated Agribusiness Development Program
IBRD	International Bank for Reconstruction and Development
ICOUR	Irrigation Company of Upper Region
IDA	International Development Association
IFAD	International Fund for Agricultural Development
IFDC	International Fertilizer Development Center
IITA	International Institute of Tropical Agriculture
IMF	International Monetary Fund
IRAT	Institut de Recherches Agronomiques Tropicales
K₂O	Potash
kg	Kilograms
MOA	Ministry of Agriculture
MTADP	Medium-Term Agricultural Development Program
N	Nitrogen
NGO	Non-Government Organization
NPART	Non-Performing Assets Recovery Trust
NSC	National Seed Committee
NSS	National Seed Service
OVI	Objectively Verifiable Indicators
P₂O₅	Phosphate
PAMSCAD	Programme of Action to Mitigate the Social Cost of Adjustment
PAT	Privatization Advisory Team
PNDC	Provisional National Defense Council
PPMED	Policy Planning, Monitoring, and Evaluation Department
PPRS	Plant Protection and Regulatory Service
PTC	Pioneer Tobacco Company
SAF	Structural Adjustment Facility

SFIU	Seed and Fertilizer Information Unit
SFPP	Seed and Fertilizer Privatization Project
SGA	Seed Growers' Association
SMU	Seed Multiplication Unit
SRI	Soils Research Institute
ST	Short-Term Consultants
T	Metric tons
T&V	Training and Visiting
TVA	Tennessee Valley Authority
UNDP	United Nations Development Programme
URADP	Upper Region Agricultural Development Project
USAID	United States Agency for International Development
VORADP	Volta Region Agricultural Development Project
VRA	Volta River Authority

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A Plan for Continuing Privatization of the Seed and Fertilizer Industries in Ghana

I. Purpose of Mission

A. Introduction

Ghana has survived and fed itself for centuries using traditional subsistence agricultural systems. As the 21st century approaches, many advances and improvements have been made, yet there still exists an entrenched core of traditional farmers who have production limited to the "sustainable" realm. The agricultural potential of this country has barely been tapped.

The Government of Ghana (GOG) has expressed the desire to transfer the responsibility for the production and marketing of seed and the marketing of fertilizers from the Ministry of Agriculture (MOA) to the private sector. The MOA will retain certain responsibility as outlined in Chapter VII and include quality control and monitoring to ensure orderly and efficient development of the seed and fertilizer industries.

In 1988 the GOG commenced the process of privatizing the seed and fertilizer industries. Initial steps were taken to involve the private sector in the production and retailing of certified seed and the procurement and retailing of fertilizers. The International Fertilizer Development Center (IFDC), through the United States Agency for International Development (USAID), was requested to share with the GOG its experiences in assisting countries in the privatizing processes. IFDC was contracted to design a system that would, when implemented, speed the process of privatizing a successful seed and fertilizer industry in Ghana.

The team members, project rationale, goals, scope of work for this project, and organizations and individuals contacted during the study team's mission to Ghana are cited in Appendix I. In general, the principal objectives were:

B. Objectives

1. To design a seed and fertilizer system that will enhance the development of an integrated agricultural production and supply system.
2. To increase food production through the use of improved seed, the use of appropriate fertilizers, and the adoption of recommended cropping practices.
3. To develop a free, competitive, and efficient seed and fertilizer sector that will supply the Ghanaian farmer with a timely supply of the essential inputs in the most cost-effective manner.

4. To develop the human resources from within the Ghanaian society to manage the seed and fertilizer industries.

With successful achievement of the project objectives, the overall goal of establishing a free and competitive integrated agricultural supply and marketing system will be accomplished. Such a system will emphasize value-added production to serve the domestic and export markets.

II. Macro Economic Setting

A. Introduction

Because of distorted macroeconomic policies and inefficient institutional arrangements, Ghana's economic growth was insignificant during the 1960-80 period. During that period, Ghana's population grew at 2.9%, whereas its GDP (gross domestic product) grew at 1.4% per annum, implying a significant decline in per capita income. Likewise, Ghana's food and nonfood crop output increased at an annual rate much lower than population growth. This led to decreased food production per capita and reduced foreign exchange earnings. To reverse these trends, Ghana launched a bold Economic Recovery Program (ERP) in 1983. Several policy measures were introduced under this program. Some of the important measures focused on: (1) the removal of subsidies that were causing distortions and a drain on the national budget, (2) liberalization of the foreign exchange market, (3) the phased withdrawal of the government from production and distribution-related activities, and (4) promotion of private-sector involvement in trade, commerce, industry, and agriculture.

These macroeconomic policy and institutional changes affected several sectors of the economy, including the agricultural and fertilizer sectors. The removal of price controls and the depreciation of the cedi (Ghanaian currency) created an extremely favorable environment for farmers and traders to respond to these new price signals. These measures provided better incentives for farmers and traders and led to a rapid growth in crop output. Farmers increased crop output by expanding the area under cultivation. It was estimated by the Ministry of Agriculture that during the 1982-88 period, the agricultural sector experienced a growth rate of over 2% per annum, as against 1.4% during the 1965-80 period. Sustaining these growth trends required substantial development of physical and institutional infrastructures that were not totally available; as a result stagnation of agricultural growth set in.

Like agriculture, the fertilizer sector was also affected by these macroeconomic and institutional changes. In three areas, the changes are marked. First, a serious effort has been made to reduce fertilizer subsidies that were estimated at over 60% in 1980. This resulted in increased fertilizer prices for the farmers. Second, during the 1982-90 period, the value of the cedi depreciated from ₵2.80 per US \$ in 1982 to ₵350 per US \$ in 1990. This also led to increased cost of fertilizer imports and thereby increased prices for the farmers. The combined effect of starting to remove the fertilizer subsidies and the depreciation of the cedi was that fertilizer prices increased by 160 fold—from ₵550 per product ton in 1982 to ₵80,000 per ton in 1990. However, it must be stressed that crop prices also increased during this period, thus compensating at least in part for the increased

fertilizer prices. Third, the government reduced its involvement in fertilizer distribution and allowed private traders to import and market fertilizers. Prior to 1988, the Ministry of Agriculture had a monopoly on the import and distribution of fertilizers. Thus, the process of privatizing the fertilizer sector has begun.

B. Agriculture and Its Role in the National Economy

Agriculture is the mainstay of the Ghanaian economy. Recent data indicate that the agricultural sector accounts for about 49% of the Gross Domestic Product (GDP), 77% of export earnings, and 67% of total employment. Thus a stagnant agricultural sector in Ghana implies not only stagnation in economic growth, but also hunger and malnutrition for millions of people. The Ministry of Agriculture has estimated that a minimum of 4% annual growth in agricultural output is absolutely necessary for sustained economic growth and food security. The Ministry of Agriculture, in the Medium Term Agricultural Development Program (MTADP), designated the following roles for the agricultural sector:

1. Provide food security for all Ghanaians by way of adequate and nutritionally balanced diets at affordable prices.
2. Create employment opportunities in the rural areas.
3. Generate foreign exchange through traditional and nontraditional exports and thereby improve the balance of payments.
4. Provide raw materials for industrial development.
5. Promote balanced regional development.

C. Agriculture and Fertilizers

In achieving and sustaining a 4% annual growth rate in the agricultural sector, the MTADP includes an important role for increased and more efficient use of improved seed and fertilizer. It is expected that 1.5% of the 4% annual growth in crop output would be achieved through increased crop yields, and the remaining 2.5% through area expansion including irrigation. In increasing crop yields, seed and fertilizer technologies will play a major role. To quote the MTADP:

Productivity growth will come from seed and fertilizer technology. Yield improvement will be the major source of growth for food crops like maize, cassava, sorghum, rice, groundnuts, and beans. Area expansion will be the driving force for growth in tree crops, cotton, tobacco, rice, and vegetables (p. viii).

The plan stresses that not only will fertilizer use be increased, but it will be made more efficient and cost effective through research, on-farm trials, and appropriate formulations.

D. Food Security and Fertilizer Use

Because of the rapid increase in population and slow growth in crop output, per capita food production decreased by about 28% between 1970 and 1982. Consequently, Ghana's dependence on food imports increased. It was estimated by the Ministry of Agriculture that in 1988 Ghana had a deficit of 167,000 tons of food grains (about 6% of aggregate demand) which was met by imports. A deficit in the national food balance not only drains scarce foreign exchange resources but also keeps many people hungry and malnourished. Recent estimates suggest that average daily food intake for Ghana's population is about 1,700 calories per capita, as against a minimum of 2,400 calories recommended by the Food and Agriculture Organization of the United Nations (FAO) for a normal healthy person. Thus, food availability, which is directly dependent upon increased domestic production, has to increase in both quantity and quality. Food security at the national as well as at the household levels is a high priority.

E. Population Structure

Ghana's population in 1989 was estimated at 14.8 million. With a growth rate of 2.9% per annum, the country's population will exceed 20 million by the turn of the century.

The main population centers are concentrated along the coast, in the northern areas near Côte d'Ivoire, and in the principal cities of Accra and Kumasi. The regional distribution of Ghana's population is presented in Table II-1. As indicated, with the exception of Greater Accra, most people live in rural areas. For all of Ghana, 68% of the population is classified as rural.

Table II-1. Population Distribution by Regions, 1984

Region	Urban	Rural	Total
Greater Accra	1,185,454	234,612	1,420,066
Western	254,655	862,275	1,116,930
Central	304,015	841,505	1,145,520
Eastern	448,777	1,230,706	1,679,483
Volta	249,106	951,989	1,201,095
Ashanti	670,375	1,419,308	2,089,683
Brong Ahafo	313,565	865,842	1,179,407
Northern	286,560	876,085	1,162,645
Upper East	65,447	706,137	771,584
Upper West	47,435	391,726	439,161
Total	3,825,389	8,380,185	12,205,574

Source: Census Office, Accra.

As is typical of many African countries, demographic trends indicate that the urban population will grow at about 7% per annum during the next 5 years. This population shift will mean additional crop markets for the rural food producers. Improved and additional crop markets will be necessary to offtake the crop produce and move it to the rural areas as well as the urban population centers.

The rapid growth in population, especially in the urban areas, will lead to a shift in the consumption pattern. The demand pressure on cereals, especially maize and rice, will be high.

On the other hand, the generally high population growth rate will also put pressure on land in the rural areas. Where land has been allowed to lie fallow for several years and naturally rejuvenate soil fertility, the fallow period has been drastically reduced in several parts of the country because of population pressure.

There is therefore the urgent need to increase the use and efficiency of productivity enhancing inputs such as improved seeds and fertilizers along with improved cultural practices. Otherwise the necessary increase in agricultural production will not be attained.

F. Trade

The data in Table II-2 show that Ghana continues to import a sizable volume of rice. Wheat will continue to be imported since it is not produced in Ghana. Ghana achieved self-sufficiency in maize production in 3 of the 4 years between 1985 and 1988. Whether the production beyond the domestic demand can be exported or not will depend on the competitiveness of the production of those crops grown in Ghana with the international markets. A study by Asante, Asuming-Brempong, and Bruce (1989) has shown that cost of cereal production (c.i.f. prices) is the major factor influencing the competitiveness of cereals. Cereal yields per unit of land must be increased and the cost per kilogram of output reduced if the Ghanaian farmer is to be competitive on the international market. The international price is beyond the control of the farmer. The technology that will improve the farm productivity is available and needs to be adopted by the Ghanaian farmer. There is an urgent need to devise strategies which will motivate farmers to adopt the technology for increased crop yields.

Table II-2. Ghana Cereal Imports, 1980-89

	Wheat	Maize	Rice
	----- ('000 tons) -----		
1980	31.7	12.6	65.9
1981	83.5	27.0	31.9
1982	52.7	81.7	16.4
1983	60.0	61.8	31.1
1984	55.0	38.0	13.1
1985	72.0	0	20.6
1986	77.0	0	25.0
1987	78.0	10	37.7
1988	124.2	0	43.0
1989	115.5	0	24.7

Source: PPMED, MOA (1991).

G. Export Potential

Because of relatively slow growth in cereal production and rapid increase in population, sub-Saharan Africa has changed from a food surplus region in the 1960s to a food deficit region in the 1980s. Consequently, cereal imports increased from 4.1 million tons in 1974 to about 8.0 million tons in 1986 and 1990 (Table II-3). The FAO projections indicate that cereal imports will continue to increase in the 1990s and will reach about 17.0 million tons in the year 2000.

Table II-3. Sub-Saharan Africa: Cereal Imports, 1974-2000

Year	Imports ('000 tons)
1974	4,108
1986	8,081
1990	7,900
2000	17,000

Source: World Bank. 1990. *World Development Report*.

Many countries in West Africa are food deficit and therefore depend on food imports. Data in Table II-4 indicate that 11 West African countries imported about 2.5 million tons of cereals in 1988. Cereal imports by individual countries range from 103,000 tons (Liberia) to 494,000 tons (Côte d'Ivoire). As many of these countries are neighboring countries of Ghana, these countries will provide a potential market for cereal exports from Ghana. However, to improve Ghana's comparative advantage for exports, costs of transporting goods from the village to the ports will have to be reduced.

Table II-4. Cereal Imports of Selected West African Countries, 1988

Country	Cereal Imports ('000 tons)
Nigeria	333
Niger	151
Mali	109
Burkina Faso	128
Togo	110
Benin	121
Côte d'Ivoire	494
Guinea	222
Senegal	461
Cameroon	282
Liberia	103
	2,514

Source: World Bank. 1990. *World Development Report*.

H. Yield Potential

There is great potential for increasing food crop yields in Ghana. Ghana has untapped fertile soils for horizontal expansion and adequate rainfall and sunshine and the technology for increasing crop yields. However, as shown in Table II-5 farmer yields of key crops are less than 25% of yields attained on research plots.

Table II-5. Average Farmer and Research Yields and Potential Yields on Soils Having a High and Moderately Suitable Crop Production Rating

Crops	Average Farmer Yields ^a (tons/ha)	Average Yields on Research Plots ^b (tons/ha)	Land Rated Highly and Moderately Suitable (million) ^b (ha)	Increase in Crop Output if Research Yields Obtained (million tons)
Maize	1.0	5.6	8.1	37.3
Sorghum	0.5	3.0	8.5	19.3
Lowland rice	1.3	4.0	2.4	5.9
Groundnuts	0.9	2.0	10.1	10.6
Cassava	7.5	21.6	7.9	91.6
Yams	5.2	16.5	4.0	34.4

a. Source: Ghana: Economic Recovery Program and Agriculture 1990, MOA.

b. Source: Fertilizer Requirements and Use in Ghana.

The average maize yield in the 1980s (excluding 1983) was about 1.0 tons/ha. Research data show that yields of 5.6 tons of maize per hectare on suitable soils are possible. If farmer yields could be brought to the level attained in research trials, incremental production would total 37 million tons.

Even higher maize yields are reported by Global 2000. Data obtained from Global 2000 and reported by McCune (1990) show that 7.0 tons of maize per hectare was produced on test plots. On farmer fields that followed the Global 2000 recommendation in 1987 an average of 3.7 tons of maize per hectare was produced.

I. Economics of Crop Production

The economic return to Ghanaian farmers from using fertilizer varies by farm type and the level of farm management. Based upon information provided in the 1990 report "Fertilizer Requirements and Use in Ghana," the judicious use of fertilizer is economically beneficial under the four main farming systems: I—root crops and arable crops, II—permanent trees and food crops, III—plantation crops, and IV—monocrop arable crops. Maize is the principal crop fertilized under each system.

As shown in Table II-6, the average profit per acre from using fertilizers ranges from ₵4,920 on oil palm to ₵19,650 on maize under a monocrop farming system.¹ While the economic return to farmers from using fertilizer is positive, the benefit:cost ratio varies from a low of only 1.35 for oil palm to 2.29 for maize under farming system I. FAO

1. Includes an estimate of all crop production costs.

suggests that under cropping systems, such as in Ghana, a benefit:cost ratio of at least 2.0 is required to encourage fertilizer use.

Table II-6. Economics of Small Farmer Fertilizer Use by Farming System

	Farming System			
	I	II	III	IV
Principal crop fertilized	Maize	Maize	Oil Palm	Maize
Incremental production cost using fertilizer (1 acre) ^a	¢11,800	¢11,600	¢14,210	¢23,700
Incremental revenue using fertilizer (1 acre)	¢26,980	¢21,280	¢19,130	¢43,350
Average profit from fertilizer use	¢15,180	¢9,680	¢4,920	¢19,650
Benefit:cost ratio	2.29	1.83	1.35	1.83

a. Note: The fertilizer ratios assumed are as follows:

Farming System	N	P ₂ O ₅	K ₂ O
	------(kg/ha)-----		
I	25.5	15	15
II	25.5	15	15
III	-	138	18
IV	25.5	15	15

Source: "Fertilizer Requirements and Use in Ghana," December 1990.

Results from Global 2000 indicate that under their program (a fertilizer recommendation of 100 kg of 15-15-15 plus 100 kg of ammonium sulfate) farmers achieved average yield increases of 1.5 tons of maize per acre. The estimated benefit: cost ratio was 6.4.²

2. Note: D. L. McCune – unpublished report, November 1990.

III. Current Status of the Seed Industry

A. Introduction

The first organized seed program in Ghana was the Seed Multiplication Unit (SMU). It was initiated in 1958 and continued through 1972, at which time the present Seeds Decree (NRCD 100) was established. The SMU was supported by the USAID MIDAS I Rural Development Program from 1973 to 1979. The Ghana Seed Company (GSC), a government owned organization, was formed in 1979, with assistance from the MIDAS II project. USAID funds were provided until 1985 and then suspended because of poor management and operations at GSC.

What has followed, between 1986 and 1990, is a series of consultant reports by individuals and teams from USAID, the World Bank, and the International Maize and Wheat Improvement Center (Centro Internacional de Mejoramiento de Maiz y Trigo) (CIMMYT). The main recommendations in each study were that (1) the seed industry be restructured, (2) quality control monitoring be done by the MOA, and (3) the commercial operations be in the hands of the private sector. The first positive step the GOG made in the restructuring effort was closing the GSC in December 1989.

As a result of the restructuring recommendations, the Crop Services Department (CSD) in the MOA prepared a proposal for the Ghana Seed Industry Development Project and asked both the World Bank and USAID to fund a 3-year, \$4.3 million project.

The USAID Agricultural Productivity Promotion Program (APPP) from 1988 to 1991 has provided \$1.5 million as startup funds for the formation of the Ghana Seed Inspection Unit (GSIU), the National Seed Service (NSS), and support to the institutions producing Breeder and Foundation Seed. This support sent a message to the MOA that USAID was serious about continuing its commitment to the seed industry restructuring effort. In December 1990 the Secretary of Agriculture requested USAID to take the lead and fund a project with emphasis on seed privatization. As an initial step, the MOA and USAID organized a seed workshop entitled: "Private Sector Participation in High Quality Seed Production for Increased Crop Yields." The workshop was held in Kumasi during April 16-18, 1991. The objective was to bring the MOA, the Crops Research Institute (CRI), and private seed growers together for the first time to discuss the future of the Ghana Seed Industry.

B. Product

The major crops currently involved in seed production are: maize, rice, cowpeas, millet, groundnuts, and sorghum. Eventually all seed crops will be addressed by their potential to produce income and profit.

1. Research

Agricultural research is conducted by the Crops Research Institute (CRI) under the Council for Scientific and Industrial Research (CSIR). There are two research stations to serve the different agroecological zones: Kumasi for the Southern Region and Nyankpala (near Tamale) for the Northern Region.

The current emphasis is on small-scale farming systems and breeding for high-yield and disease-resistant varieties. Six improved maize varieties and four cowpea varieties have been released since 1985. Donors that currently support CRI include Canada (Canadian International Development Agency-CIDA), Germany (Deutsche Gesellschaft für Technische Zusammenarbeit-GTZ), and France (Research Institute for Tropical Agriculture-IRAT). The World Bank has recently released funds for an institutional building project to strengthen the linkage between the MOA's extension activities and CRI's research programs.

2. Production/Supply

With the introduction of the GSIU as the national seed certification service, the CSD required that those farmers wanting to produce seed in 1990 register with the inspection unit. Thus far, a total of 163 farmers have registered as seed growers. The farm sizes vary from 1 ha to 50 ha. Most were participants in the Global 2000 seed production program for maize.

a. Breeder Seed Production

Breeder Seed Production (BSP) is one of most important components for the success of any seed program. It is the source of all new improved varieties. Each year small quantities of breeder seed are produced by the CRI breeders for multiplication. The existing program needs to be expanded to include quality control standards and proper record-keeping. In 1988 for maize, CRI produced 1,320 kg of Breeder Seed for seven varieties.

b. Foundation Seed Production

Foundation Seed Production (FSP) for maize and cowpeas is currently under the control of the Grain and Legume Development Board (GLDB). GLDB operates nine farms with two specializing in FSP. For rice FSP, the Kpong and Ghana/Korean farms have produced seed, but not on a regular basis. There is no coordination of this important production at the national level. In 1989 for maize, 37 tons was produced by the GLDB. The GSC's last effort produced 104 tons of maize, 172 tons of rice, and 4.5 tons of cowpeas.

c. Certified Seed Production

Certified Seed Production (CSP) is based upon the FSP seed stock. With the new GSIU in place and with Global 2000's involvement, certified maize seed is now produced in Ghana with proper field inspections, testing, and quality control. Certified seed is marked with analysis tags and is properly sealed after it has been harvested, cleaned, treated, and bagged. It is a high-quality product that demands a high price. The GSC called their marketed product "certified seed," yet it was certified by their own staff and quality was often questionable.

Improved seed is seed that originated from an improved breeding program, but was not officially certified for purity and germination standards. A farmer may purchase improved seed for one season and then save a portion of harvested crop to use as seed for the next 2-4 years, or until such time as new seeds are purchased. In 1988, 150 tons of improved maize seed was sold by the GLDB.

d. Commercial Seed Production

Commercial seed in Ghana has no known origin source and, for all practical purposes, could be grain. There is a distinct difference between certified seed and commercial grain. Certified seeds for planting must be varietally pure, alive for germination and reproduction, and relatively free from disease and insect pests. Grain need not be alive and it may even be a mix of varieties. Commercial seed/grain accounts for at least 90% of what is planted in Ghana for grain production. Farmers choose this seed/grain for two reasons: it costs less than improved seed and it is available in all markets.

Improved/certified seed used in rainfed agro-systems can demonstrate increased yields in high rainfall years, yet in poor rainfall years there is little difference between improved seed and seed/grain.

3. Quality Control

In developed countries, quality control is handled by a state agency to insure that seeds produced are free of contamination, have genetic purity, and have minimum germination standards. The quality control unit is responsible for consumer protection. As previously mentioned, the GSC had its own internal quality control system; however, it proved to be ineffective.

In August 1990, the GSIU was initiated, with funding assistance from USAID's APPP. This office is under the Plant Protection and Regulatory Service (PPRS). The inspection unit covers four regional offices with the central office being in the complex of the National Seed Testing Laboratory in Pokoase. The seed lab is in the construction stage and has

equipment to start seed testing this year. There is a competent staff in place to lead this program.

C. Pricing

The seed-pricing structure is as variable as the open grain market. Again, if grain is purchased to be used as seed, then the price fluctuates seasonally. The published prices for 1990-91 surveyed by the PPMED varied accordingly (Table III-1).

Table III-1. Weekly Grain Price Survey - The High and Low Price

Crop	Rating	Dates	Price (¢/45-kg bag)
Maize	High	July 7, 1990	19,800
	Low	October 6, 1990	4,020
Rice	High	May 4, 1990	27,000
	Low	January 5, 1991	12,000
Millet	High	March 9, 1991	20,000
	Low	April 6, 1990	5,637
Sorghum	High	November 16, 1990	24,137
	Low	January 12, 1991	7,000
Cowpea	High	October 6, 1990	38,750
	Low	March 23, 1990	10,000

For certified seed, contract seed growers for the GSC received a 10%-15% premium over the Ghana Food Distribution Corporation's (GFDC) grain prices. In 1988, the minimum price for maize grain was ¢5,000 and for rice grain ¢6,500/45-kg bag. After the GSC added transportation, drying, processing, storage costs, and their profit margin, the selling price for maize was ¢16,500 and for rice ¢12,000/45-kg bag.

Seed pricing is complicated and difficult to understand. Currently, seed that is sold through the Extension Services Department (ESD) offices varies in cost from ¢12,000 to ¢15,000 for a 45-kg bag. Seed bags were labeled as either commercial seed or certified seed or both. Seed purchased in rural towns without ESD outlets, through private retailers ranged in price from ¢20,000 to ¢25,000/45-kg bag. These seeds were sold in small 0.5-kg bags and were not labeled with known origin.

One report on seed pricing indicated that (1) 50% of the farmers save their seed from year to year because it eliminates using cash for inputs, (2) 33% purchase the cheapest seed available to minimize expenditures, and (3) 17% purchased improved seed if it were available.

D. Distribution

The availability of improved/certified seed is not countrywide. A farmer would have to know where to find this seed and it may mean traveling many miles to get it. The ESD outlets seem to be a consistent source, as long as they have seed in stock.

In one village, the "best" farmer was recognized to be the most reliable seed source and he/she distributed seed each year to the other farmers from his/her own production.

Prior to dissolution, the GSC did have an organized national seed distribution system with regional offices, sales outlets, and kiosks. It is difficult to measure their effectiveness as their sales in 1988 were reported to be only 5% of the market for maize seed.

The GLDB is a distributor of both improved seed and commercial seed. They sell seed to farmers who have participated in their on-farm demonstrations and adaptive research trials. They also sell seed to the extension office. Seed growers who want to produce certified seed have to purchase Foundation Seed at a cost of ₵30,000/45-kg bag from the GLDB office.

E. Promotion

Extension activities are the main means of promotion for the use of improved varieties. The ESD and the GLDB demonstrate and sell improved seeds.

The Global 2000 program has started a promotional effort to help their seed growers become certified and then market their seed. These seed growers were originally farmers who participated in the Global 2000 program. This effort provided seed growers with a distinction between seed production and grain production. They have mainly promoted the new disease-resistant maize variety – Okomasa.

Promotion by the private sector doesn't exist at this time. A study titled "Revitalization of the Seed Industry" by the Media Majique and Research Systems, 1989, included a promotion plan for the GSC to use in seed marketing. The study was extensive and informative, but the GSC closed before any ideas were used.

The MOA provided a service for the 1991 crop year by publishing in the newspaper a list of registered seed growers that had Improved Good Quality Seeds for sale. The announcement said that "these seed producers have met field inspections and certification standards and therefore their seeds have been certified to be of good quality by the Seed Inspection and Certificate Unit of the MOA." This is a good example of how the MOA intends to support the development of the private seed sector.

F. Training

The core of "Seed Specialists" in Ghana learned their trade working for the GSC. Eight were formally trained at a short-term seed course in Edinburgh, England.

The Ghana Grains Development Project (GGDP) sent two participants to the excellent Mississippi State University Seed Technology graduate program. One is now at CRI as the Breeder Seed Specialist and the other is the Seed Technologist for the GLDB.

G. USAID and Other Donor Activities

USAID, World Bank, CIDA, GTZ, and IRAT have made contributions to Ghana's seed industry. These activities are explained in the introduction of Chapter III, Current Status of the Seed Industry. USAID started supporting the Ghana Seed Multiplication Unit in 1973 and continued to support it until 1979. The Ghana Seed Company was formed in 1979 with USAID assistance and was supported until 1985. The Ghana Seed Company was closed down during December 1989.

A series of studies funded by USAID, the World Bank, and CIMMYT recommended the restructuring of the Ghana seed industry and detailed the role of the public and private sectors. The MOA prepared a proposal for the Ghana Seed Industry Development Project and sought \$4.13 million in funding from USAID and the World Bank. The USAID Agricultural Productivity Promotion Program (APPP) has provided \$1.5 million for the start-up of the Ghana Seed Inspection Unit, the National Seed Service, and to support the production of breeder and foundation seed. Research on breeder seed is conducted by the Crops Research Institute (CRI). CRI is supported by donor funding from USAID, CIDA, GTZ, IRAT, and the World Bank.

1. Lessons Learned

The overriding lesson learned in USAID experiences in Ghana is that accountability and authority must be vested in the organization responsible for the activity. For long-term success, this means that the organization has profit and loss accountability and that its entire operations must be managed accordingly (e.g., quality assurance, effective promotional programs, pricing to generate a reasonable return, etc.). This is required for sustaining the organization's operation. Factors that contributed to the closing of the GOG parastatal GSC include (a) the lack of quality control, (b) absence of complete marketing programs, and (c) ineffective management decisions regarding pricing.

Another donor project that may have relevance to the privatization project is the European Economic Community (EEC) efforts to privatize palm oil production in Ghana and a 3,000-ha cattle ranch in northern Ghana. Their experience may provide guidance in the process of privatizing the seed and fertilizer business in Ghana.

H. Problem Areas and Constraints

The Ghanaian seed industry suffers from the many years of poor management, inadequate market development programs, and inefficient production and quality control efforts. Although the GSC was closed, the damage caused by providing farmers poor-quality seeds will linger for years. Not only has the market for certified seeds collapsed (it is estimated that certified seed accounts for only about 5% of all seed planted), but the farmers' basic attitude toward certified seed is negative. The major problem areas and constraints that must be addressed to revitalize the seed market are as follows:

1. **Market structure:**
 - a. The absence of an established and effective institutional framework for the seed industry, including clearly designated roles for the government and private sector.
2. **Production:**
 - a. Shortage of properly trained and experienced people.
 - b. Inadequate equipment for production of breeder and foundation seed.
 - c. Shortage of working capital for farm inputs.
 - d. Inadequate distribution.
3. **Promotion:**
 - a. Absence of a targeted, sustained promotion program on benefits of improved seed usage.

IV. Current Status of the Fertilizer Industry

A. Introduction

Despite the GOG's desire to increase private-sector participation in fertilizer marketing, most marketing functions continue to be either performed or heavily influenced by the government. The Ministry of Agriculture is directly involved in determining annual fertilizer requirements, setting fertilizer prices, and in the physical distribution of fertilizers to Ministry of Agriculture storage depots and retail outlets.³ In the major fertilizer use areas (Upper East, Upper West, Northern, Brong-Ahafo, and Volta Regions) the parastatal organizations Farmer Service Companies Ltd. (FASCOM) are the principal fertilizer marketers.

The involvement of the private sector in fertilizer marketing has so far been limited to one importer and a number of small volume retailers, most of whom now carry fertilizer as a complement to their line of agricultural inputs (e.g., pesticides, herbicides, farm implements). As of early 1991, an estimated 600 private retailers had completed official registration formalities. However only 10%-20% are currently involved in the business. The sales volume of private fertilizer retailers ranges from an estimated 2 to 650 tons per year (tpy). Some retailers are selling to roadside merchants who rebag the product in ½-kg bags for resale.

The MOA is moving forward with plans to withdraw from the fertilizer business. All MOA stocks are being offered for sale on a sealed bid basis. A list of MOA fertilizer depots is presented in Appendix II. Those people interested in engaging in the fertilizer business are requested to submit bids on the MOA stocks held in district depots. The individual that commits to buying the highest quantity of MOA stocks receives the award and is allowed use of the MOA depot until the tendered stocks are sold. The retailer is also entitled to purchase the balance of the MOA fertilizers held in the depot. Once all stocks are depleted, the MOA will consider leasing the depot to the retailer. The study team participated as an observer in the opening of bids for 9 of the 50 MOA-owned depots. The bids ranged from ₵1,000,000 to ₵5,000,000 per depot. One company committed to the purchase of stocks (and the use rights) of six depots.

One private importer/wholesaler (Wienco Ghana Ltd.) imported on behalf of the European Economic Community (EEC) 21,000 tons of product in 1990 with most being sold to FASCOM. A small quantity still remains in the importer's warehouse.

The product flow in the current fertilizer marketing system is diagrammed in Figure IV-1. In this system the Government dominates the distribution network. The

3. Retailers and dealers are used interchangeably in this report.

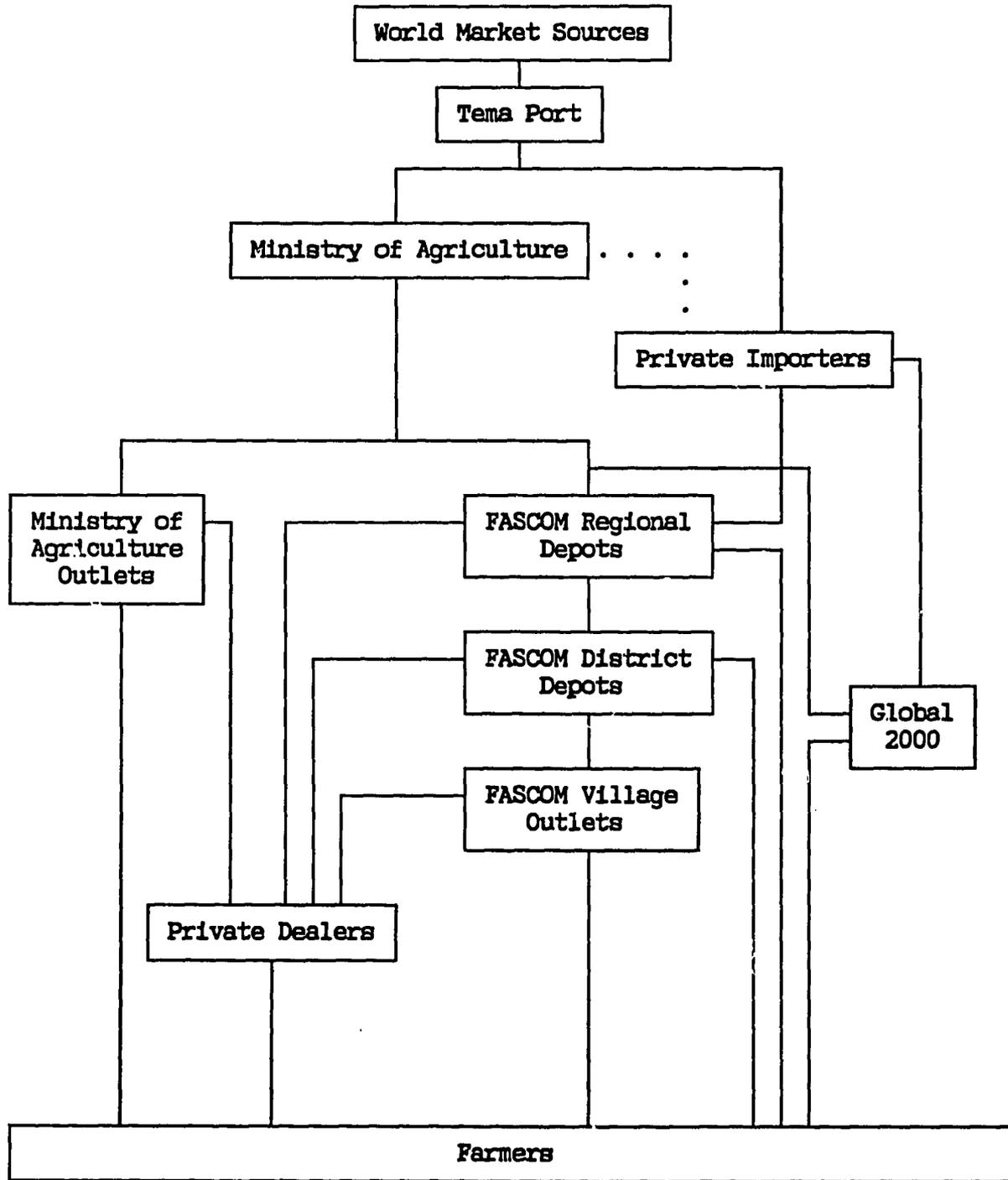


Figure IV-1. Product Flow in the Present Fertilizer Marketing System.

broken line from the MOA to the private importers signifies that Government clearance is necessary to import. Figure IV-2 shows the title flow in the present system. The MOA retains title to most of the fertilizer that passes through its own outlets and also through FASCOM. The fertilizers are given to FASCOM on consignment; therefore title rests with the MOA until it is transferred to the farmer at the time of the sale.

FASCOM makes an outright purchase of a small portion of their fertilizers from the MOA and thus title is actually transferred to them. If a private organization imports fertilizer the title to the product is transferred to the importer wherever specified in the sales contract; however, it generally is in the port of loading.

B. Fertilizer Consumption and the Product Mix

Although data on fertilizer consumption are incomplete, it is apparent that total nutrient use is substantially lower than the levels attained in the late 1970s. Total nutrient use (N + P₂O₅ + K₂O) averaged slightly over 21,000 tpy for the period 1978-82. During the 5-year period ended in 1989, consumption averaged only 10,000 tpy. The reasons for this undesirable trend appear to be directly linked to the recent substantial fertilizer price increases and thus the farmers' perceived idea that it will not pay to use it and the inadequacy of the credit system in serving the farmers.

The fertilizer products used by Ghanaian farmers are based upon recommendations made by the Ministry of Agriculture and the Soils Research Institute (SRI) and reflect the predominance of cereals, particularly maize, in the cropping system. As shown in Table IV-1, in 1989 an estimated 32,657 tons of fertilizers was used. The principal products used were 15-15-15 (7,227 tons) and 20-20-0 (8,001 tons) for basal application and ammonium sulfate (13,047 tons) and urea (2,092 tons) for topdressing.

Table IV-1. Fertilizer Use By Product, 1989

Product	Product	Estimated Sales, 1989		
		Nutrient		
		N	P ₂ O ₅	K ₂ O
		----- (tons) -----		
Urea	2,092	962	-	-
Ammonium sulfate	13,047	2,740	-	-
15-15-15	7,227	1,084	1,084	1,084
17-17-17	1,537	261	261	261
20-20-0	8,001	1,600	1,600	-
Muriate of potash	195	-	-	-
Other	558	84	84	84
Total	32,657	6,731	2,768	1,546

Source: Crop Services Department, MOA (1990).

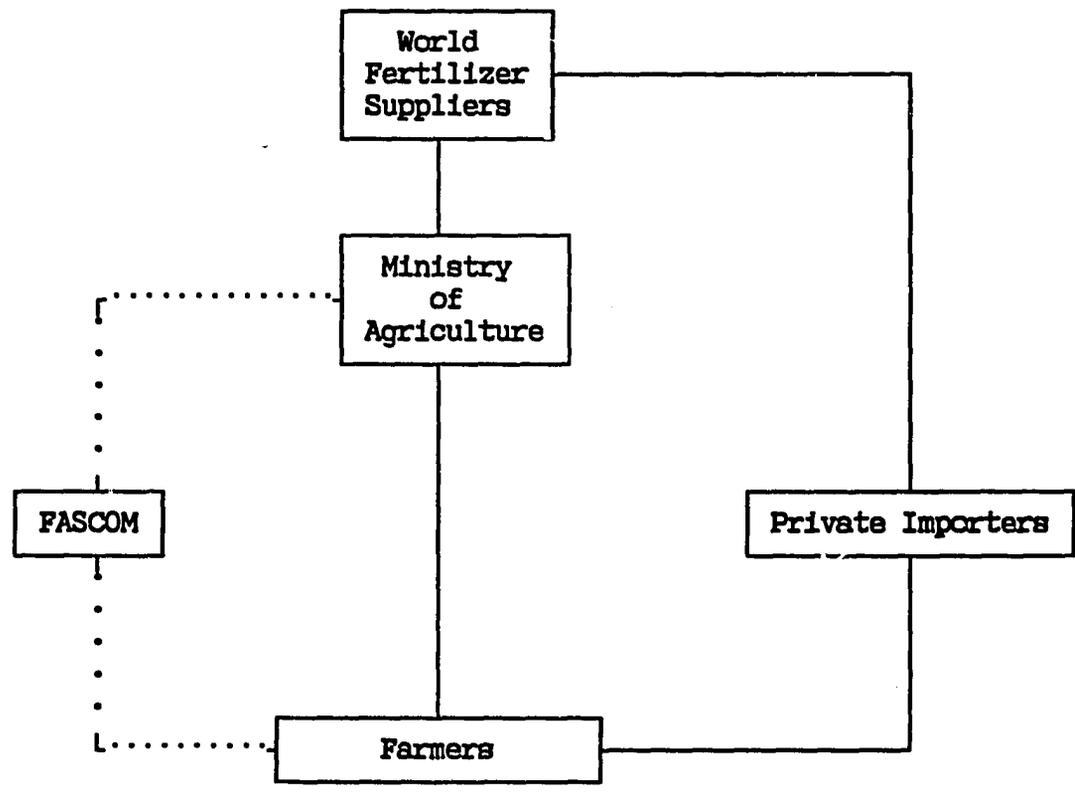


Figure IV-2. Title Flow in the Present Fertilizer Marketing System.

The continued predominance of ammonium sulfate (21% N) over urea (46% N) as topdressing nitrogen (N) source is of concern, particularly in light of the economic advantage of urea as an N source, the greater acidifying effect of ammonium sulfate, and the absence of a verified soil sulfur deficiency. The application of urea (because of its rapid conversion to ammonium carbonate, mixing with the soil is required to prevent ammonia volatilization) is more tedious to apply than ammonium sulfate, thus influencing farmers' preference for ammonium sulfate. The extension service, including the observed efforts of the Global 2000 program, is not effectively dealing with facilitating the much needed shift by farmers to the use of urea.

The regional pattern of fertilizer use is shown in Table IV-2. Six regions (Volta, Ashanti, Brong Ahafo, Northern, Upper East, and Upper West) account for an estimated 80% of the fertilizer sales in Ghana.

Table IV-2. Fertilizer Sales By Region, 1989

Region	Actual Sales (product tons)	%
Western	294	0.9
Central	1,703	5.2
Greater Accra	768	2.4
Eastern	817	2.5
Volta	4,656	14.3
Ashanti	3,435	10.5
Brong Ahafo	4,546	13.9
Northern	6,578	20.1
Upper East and Upper West	6,440	19.7
Unknown ^a	3,420	10.4
	<u>32,657</u>	

a. Includes sales from MOA headquarters and national depots as well as private sector sales. Private-sector sales are centered in the Ashanti, Brong Ahafo, Northern, and Upper East and West regions.

Source: Crop Services Department, MOA (1990).

C. Fertilizer Supply

1. Imports

Ghana does not possess any fertilizer manufacturing facilities; hence, demand is met through importation. In 1990 the government liberalized fertilizer importation so that any

registered fertilizer retailer would be allowed to import fertilizers pending approval of the Ministry of Agriculture and the Environmental Compliance Committee. The GOG has indicated that it will no longer engage in direct importation of fertilizers.

2. USAID and Other Donor Activities

USAID has a long involvement in assisting Ghana in fertilizers. One of the first activities was Ghana's attempt to construct a bulk-blending plant in the Tema Port in 1973. USAID funded a Tennessee Valley Authority (TVA) fertilizer study team to Ghana in May 1972 to determine ways for increasing fertilizer use and crop production. The study team recommended the installation of a bulk-blending plant for preparing N-P-K formulations. USAID sponsored a second TVA study team in September/November 1972 to study the bulk-blending plant situation in greater depth. Since the early 1970s, the only known donor activities related to fertilizers in Ghana are sporadic shipments of donor-supplied fertilizers and the mid-1980s privatization study funded by the World Bank.

The IFDC privatization study team surveyed the donors that have recently provided fertilizer aid to Ghana. The last donor fertilizer was provided by EEC in 1989 when 21,000 tons of product was imported. The quantities and types of fertilizer were 10,000 tons of 20-20-0, 6,000 tons of urea, and 5,000 tons of 15-15-15. The Wienco (Ghana) Company negotiated the sale of fertilizer from Norsk Hydro to the EEC and arranged shipment to Ghana. Approximately 5,000 tons of the product is presently remaining with EEC/Wienco.

Donor-supplied fertilizers have played an important role in the past in meeting Ghana's fertilizer needs. However, based upon discussions with donor representatives, none now have plans to include fertilizers in their 1991/92 aid programs.

3. Stocks

Because of the recent decline in fertilizer use, there has been a substantial buildup of stocks. As shown in Table IV-3, stocks were estimated at 67,619 tons at September 30, 1990. There have been no imports since that time and the major sales season is only now beginning in April; thus, stocks should still be about 60,000 tons.

Table IV-3. Fertilizer Stocks as of September 30, 1990

Product	Stock Balance (tons of product)
Urea	21,548
Ammonium sulfate	12,132
15-15-15	3,442
20-20-0/22-22-0	13,879
25-15-5/23-15-5	13,901
MOP	1,085
Other	<u>1,632</u>
Total	67,619

Some of the fertilizers have been in storage since 1988; however, they appear to be in reasonably good condition with only normal "bag set."

There are two major concerns regarding the stock situation and commercial importation. First, so long as low-priced stocks are available in-country that also have minimal finance charges, commercial imports will not occur. If and when commercial imports do occur, the fertilizers will have to be sold to farmers at price levels estimated at 55%-65% above those prevailing today. The question then is one of whether or not commercial firms will risk importation under such conditions.

The second concern is that of the imbalance of particular products. While the total tonnage of fertilizers is well in excess of expected requirements for the 1991 crop season, the products in greatest demand (i.e., ammonium sulfate and 15-15-15) will be in short supply. This will provide an opportunity for price increases which would have little potential for occurrence under normal market conditions. There is an adequate supply of NP and NPK fertilizers to allow substitution for 15-15-15 at the time of planting, and farmers appear to be ready to accept this substitution. The substitution of urea for ammonium sulfate is another matter and can only be brought about through a major promotional effort by the extension service. This much-needed effort is not occurring.

D. Pricing

Historically the GOG has controlled fertilizer prices. Uniform countrywide prices were set annually, and in recent years were based upon a cost-plus model (Figure IV-3); adjustments were made to provide the desired subsidy.

Type of fertilizer	Ammonium sulfate	Urea (50 kg)	Urea (25 kg)	15-15-15	20-20-0	MOP
CIF cost per ton						
CIF cost (cedi/bag)						
Bank charges 5%						
Interest on bank loans 7.5%						
Transport and other charges Tema to Tamale						
Total expenses						
Importers margin 7.5% CIF						
Wholesale price						
Retail margin 10% of wholesale price						
Retail price without subsidy						
Rounded price/bag						

Figure IV-3. GOG Fertilizer Pricing Model.

The recent liberalization of the market included a provision for price decontrol. That is, marketers (e.g., retailers and stockists) are now allowed to set their own prices based upon costs and competition. Thus far price decontrol has had little impact at the retail level. Retail prices in 1991 remain at the level set by the GOG in 1990 in key markets (Table IV-4). This is mainly due to the predominance of MOA and FASCOM outlets which have maintained government price levels. Private retailers are effectively being "forced" to meet MOA and FASCOM prices.

Table IV-4. Retail Fertilizer Prices

Year	Product			
	Urea	Ammonium Sulfate	15-15-15	20-20-0
----- (¢/50-kg bag) -----				
1982		25	30	
1983		38	53	
1984		310	450	
1985		310	450	
1986		500	800	800
1987		850	1,420	1,420
1988		1,600	2,300	2,300
1989	4,200	2,350	3,550	3,350
1990	4,200	3,100	4,200	4,200
1991	4,200	3,100	4,200	4,200

In order to provide private retailers the necessary incentive, the MOA uses a discount policy for the wholesaling of its stocks. Thus, the government is in effect subsidizing the private retailers to encourage their involvement in the fertilizer business. A more desirable market-oriented approach would have been to raise MOA retail prices to reflect real costs; FASCOM should have taken a similar action. Hence, retail prices would reflect the true cost of doing business in a given area. This would facilitate the overall transition to a privatized system. As indicated in Appendix III, the discount is the same regardless of the product but varies by quantities purchased and by location.

As indicated, the use of a discount strategy is less desirable than true price liberalization. However, given that the discount strategy has been implemented, it should be mentioned that the approach to developing the discount schedule could have been more effective. For example, there is an urgent need to promote the market for urea. Urea is the most economical source of nitrogen fertilizer, and urea stocks are excessive relative to

ammonium sulfate. An appropriate discount policy could have been used to encourage the sale of urea over ammonium sulfate. Unfortunately this was not done. Further, the discount rates include only a slight incentive for wholesalers/retailers located in the Northern and Upper regions to collect fertilizers from Tema. While it would be in the GOG's best interest to encourage the private sector to collect the fertilizers from the Tema/Accra areas and provide their own transport, the discount policy does not include an adequate transport differential.

Fertilizers continue to be subsidized in Ghana (e.g., the "discount price schedule," less than full working capital charges on stocks, inadequate costing of depots, etc.). Because of the lack of information on the c.i.f. costs of existing stocks, the exact level of subsidy cannot be determined. However, it is important to understand that based upon April 1991 international market prices, private-sector retailers would need to receive a price of $\alpha 6,515$ per 50-kg bag to justify an investment in fertilizers (Table IV-5), hence an increase of about 50%-60% over current price levels.

Table IV-5. Estimated Market-Based Fertilizer Price at Tamale - April 1991

	US \$ Per Ton	α Per 50-kg Bag ^a
Urea bagged c.i.f. Tema Port	210.00	3,885
Port charges ^b	20.00	370
Bank charges	10.50	194
Interest (7.5% of c.i.f., 90 days)	3.95	73
Importer's margin (7.5%)	18.30	339
Transport to Tamale	60.00	1,110
Retailers margin (10%)	<u>29.30</u>	<u>542</u>
Retail price	352.05	6,513

a. $\alpha 370 =$ US \$1.00.

b. Includes port charges and loss.

E. Physical Distribution

The physical flow of fertilizer through the distribution system originates at Tema Port (see Figure IV-1). Fertilizer cargoes arrive in either bags or in bulk with bagging done locally. Following port clearance and cargo inspection by an independent inspection agency, the fertilizers move by truck to either temporary storage in the port area or to in-country warehouse/transit points.

Fertilizer movement to inland depots is by road, water, and rail. Road transport is by far the major means of fertilizer transport with the private sector accounting for 80%-90% of total haulage capacity. Transport rates are controlled by the GOG as are routes for fertilizer haulage by the private sector. The inadequacy of the decreed rates and unfavorable routing have been major bottlenecks in the distribution system.

The road system includes a fairly extensive network of all-weather roads that link Tema with the regional depots that serve the principal fertilizer markets. In view of the small size of the fertilizer market, truck haulage capacity is adequate.

Ghana has a limited rail system that extends only as far north as Kumasi. Although rail transport rates are lower than truck rates, the limited network precludes any significant movement of fertilizers by rail.

An estimated 3,000-5,000 tons of fertilizer is moved each year by barges on the Volta Lake. Following truck transport from Tema Port to Akosombo, fertilizers are loaded on barges for transport to Kete-Krachi, Yeji, Makongo, and Buipe. Permanent general cargo storage facilities exist at these offloading points. Following barge discharge, movement is by truck to regional depots and sales outlets. It appears that because of the economic attractiveness of a combination of water-road transport, the use of the Volta Lake will increase in importance as the fertilizer market develops.

The warehousing system for fertilizer includes national, regional, district, and sub-district depots along with storage facilities of private retailers. The storage facilities observed are in very good condition with construction of most regional depots being of concrete floors and walls and corrugated sheeting roofs. The total fertilizer warehouse capacity is estimated (IFDC, 1986) at near 100,000 tons, of which 10,000 tons is located at Tema Port.

Warehouse management is generally in accordance with acceptable procedures (e.g., no spillage, bag stacking on dunnage, acceptable stacking patterns, etc.). The only observed problem area was in bag stack height which in some cases exceeded 40 bags; this is about double the desired level.

Including private and Government stores there are an estimated 600 fertilizer sales outlets in Ghana. This includes the national and regional depots from which retail sales are made. The MOA and FASCOM are thought to have a combined total of about 500 outlets, with the FASCOM outlets being located in the Upper, Northern, Brong-Ahafo, and

Volta regions.⁴ About 650 private retailers have officially registered as fertilizer retailers but thus far only around 100 have started stocking and selling fertilizers. The scope of their operations varies, but a basic MOA requirement is that retailers must buy at least 1 ton of product to qualify for a retailer discount (see Appendix III).

F. Promotion

Promotional efforts to expand and improve the efficiency of fertilizer use are limited to the activities of the MOA extension service including the Sasakawa/Global 2000 program and the IFAD-funded program. Staff at MOA and FASCOM sales points (as well as private retailers) consider that their role is merely that of a sales conduit; no effort is made to promote increased fertilizer sales or to advise farmers on proper fertilizer use practices.

Based upon discussions with MOA officials, the effectiveness of the extension staff in educating farmers on fertilizer use efficiency is questionable. Despite the need to shift farmer preference from ammonium sulfate to urea for topdressing, extension agents continue to recommend ammonium sulfate. Further, under the IFAD program, the standard recommendation of 2 bags of basal fertilizer and 2 bags of topdressing material per acre was (at least in one area surveyed) halved due to the "perceived" financial dilemma of farmers in buying the full package. Such practices only serve to confuse farmers and make subsequent re-education more difficult.

The extension services have generally suffered from a shortage of qualified staff, weak linkages with research, and inadequate means of transport. Of an estimated 2,800 extension staff, it is estimated that about half of the front line and specialist officers have had formal agricultural training and less than 100 have university training. There is generally an absence of an effective link between extension and researchers, and researchers are rarely involved in the training of extension staff.

4. There are two separate FASCOM organizations in Ghana. Both were formed with World Bank funding and are considered government parastatals. The FASCOM in the Volta region was created under the Volta Region Agriculture Development Project. The other FASCOM was formed under the Upper Region Agriculture Development Project. It is headquartered in the Upper East Region but has expanded its operations to include depots in the Upper East, Northern, and Brong-Ahafo Regions.

The scope of the FASCOM operations varies but most offer complete line of agricultural inputs. Seed are not being offered since this is considered to be a non-profitable item. In addition some offer such products as bicycles and radios. See Appendix IV for estimated cost profile for FASCOM operation in the Volta Region.

The methods used in carrying out extension activities are based upon the training and visiting (T&V) system. However, differing methods are used owing to the existence of other entities involved in extension (e.g., the Global 2000 program that involves the provision of a complete package of inputs supported by credit).

G. Fertilizer Recommendations

Based on current research results and yields obtained by Global 2000 the current fertilizer recommendations as shown in Table IV-6 appear to be too conservative. Global 2000 is reporting maize grain yields of up to 7 tons/ha with 3.7 tons being normal. Research also reports maize grain yields of 4-5 tons/ha. To obtain these yields Global 2000 is recommending double the rates given in Table IV-6. Fertilizer recommendations are generally not up to date and are based on data more than 15 years old.

There is a need to address the following points relative to the fertilizer recommendations.

1. Review current seed and fertilizer recommendations with research and extension to determine their current status.
2. Review the basis of fertilizer recommendations and suggest updating response curves.
3. Suggest seed and fertilizer recommendations for farmers expecting grain yields at different levels:

Low yields	-	1.5-2 tons/ha
Medium yields	-	3-4 tons/ha
High yields	-	5-7 tons/ha
4. Work out recommendations for new and improved seed and fertilizers (e.g., DAP) and for crops that are not covered by recommendations.
5. Seek a means of reducing labor costs for crop production.

Table IV-6. Fertilizer Recommendation for Maize

Agroecology Zone	Cropping History	Starter Fertilizer (20-20-0) ^a Apply 10 DAP		Sidedress (Ammonium Sulfate) ^c Apply 6 WAP ^d	
		Bags/Acre	Plants Per Milk Tin ^b	Bags/Acre	Plants Per Milk Tin ^b
Forest	Land fallowed 5 years	-----no fertilizer recommended-----			
Forest	Land cropped the previous year or cleared before 5 years fallow	1	60 (68) ^e	1	60 (68)
Transition	Land fallowed for 5 years	-----no fertilizer recommended-----			
Transition	Land cropped the previcus year or cleared before 5 years fallow	1	60 (68)	1	60 (68)
Transition	Continuously cropped	2	30 (34)	2	30 (34)
Savannah	Land fallowed	1	60 (68)	1	60 (68)
Savannah	Continuously cropped	2	30 (34)	2	30 (34)

a. Apply 10 days after planting.

b. Plants per milk tin refers to the number of maize plants (not hills) that can be fertilized with a 170-g "ideal" milk tin full of fertilizer, if recommended plant populations are adopted.

c. Urea may be substituted for ammonium sulfate but should be incorporated into the soil.

d. Apply 6 weeks after planting.

e. The first number is for full season varieties such as Dobibi planted in 90-cm rows. The number in parentheses is for earlier maturing varieties planted in 80-cm rows.

Source: Ministry of Agriculture. 1990. *Maize and Cowpea Production Guide for Ghana*.

H. Policy

Presently, Government policy is basically concerned with increasing private-sector involvement in fertilizer marketing. There is no decree or legislation concerning the role of the GOG and the private sector. A consistent effort is being made to facilitate the orderly withdrawal of the Government from the day-to-day operation of the fertilizer business. Rather than specific, stated policy measures, the transition is being handled through a series of pro-private sector decisions including (1) establishment of a retailer registration system, (2) liberalization of commercial imports subject to authorization of the MOA and the Environmental Compliance Committee, (3) the decontrol of prices and implementation of a discount system to encourage sales to private retailers, and (4) the disposition of MOA fertilizer assets (Appendix V). While such decisions are generally appropriate to foster private-sector development, clearly written policy guidelines, officially endorsed by the chairman, are needed to encourage the required private-sector investment in fertilizer marketing.

I. Fertilizer Market Information

The Crop Services Department of the MOA is responsible for collecting, analyzing, and disseminating information on fertilizer supply and use. The adequacy of the information available and the frequency of reporting have been geared to the needs of the public sector. With increased private-sector involvement, improvements will need to be made in terms of monitoring retail prices, import arrivals, stock levels, and the availability of products at the farm level. More timely reporting will also be required.

J. Problem Areas and Constraints

Ghana has excessive fertilizer stocks. The stocks, in some cases up to 3 years old, are in depots throughout the country. While this situation was not planned and is extremely costly in terms of inventory carrying costs, the existence of large stock levels acts to mask many of the inefficiencies that have historically plagued fertilizer marketing in Ghana (e.g., late arrivals, transport system bottlenecks, deficiencies in the discharge and handling of imports, physical losses in the distribution system, etc.). During the study team's visit there were neither any imports nor physical movement of fertilizers between warehouses. Hence, while past problem areas will potentially occur in the future, they were not directly observed by the study team. Rather, the problems which need to be addressed are more linked to constraints to increased private-sector involvement in fertilizer marketing. They include the following:

1. **Procurement:**
 - a. **Existence of excessive in-country stocks.**
 - b. **Limited financial resources of importers/wholesalers/retailers.**
 - c. **The continued devaluation of the cedi against the U.S. dollar.**
2. **Marketing channels:**
 - a. **Predominance of MOA and FASCOM outlets.**
 - b. **Limited financial resources of private-sector participants.**
 - c. **Shortage of properly trained and experienced people in fertilizer business management.**
3. **Pricing:**
 - a. **Continued prevalence of countrywide, government-influenced price levels with the discount system allowing inadequate margins.**
 - b. **Below cost pricing.**
4. **Credit:**
 - a. **Inadequacies of the credit system in meeting the credit needs of farmers as well as fertilizer marketers.**
5. **Promotion:**
 - a. **Lack of goal-oriented extension programs.**
 - b. **Inadequate training of extension staff in fertilizer use efficiency.**
6. **Distribution:**
 - a. **Overstock situation.**
 - b. **Warehouse management.**
7. **Profitability:**
 - a. **Small size of market in relation to investment required.**
 - b. **More favorable investment opportunities.**
 - c. **Risks that potential businessmen associate with Government control of the fertilizer business.**

V. Current Status of Agricultural Credit

A. Introduction

The Medium-Term Agricultural Development Program (MTADP) study of June 1990 underlined the lack of 'trader' and farmer credit as a major constraint to the expansion of fertilizer use. Similarly, the USAID survey of 300 private-sector firms in Ghana ranked credit as the most negative factor affecting performance. As of 1990, commercial interest rates were 27%, reflecting an underlying inflation rate of 35%. Not only was finance costly but banks, because of accumulation of non-performing assets (almost 60% of their credit to the non-government sector), were unable to make loans given capital adequacy requirements of the Bank of Ghana (BOG).

Both high interest rates and a dysfunctional banking system are impediments to the credit needed in the privatization of the seed and fertilizer industries. However, because of reforms undertaken by the GOG in connection with the Financial Sector Reform Programme (FSRP), it is projected that credit availability will improve, both generally and at the rural level. The privatization of the seed and fertilizer sectors is thus likely to coincide with the positive impacts of FSRP. Loan fund availability and the banking system's performance is expected to improve.

B. Interest Rates

Present high interest rates on treasury obligations (35% for 2-year treasury notes) reflect aggressive efforts by the IBRD and BOG to: (1) restore and maintain positive real interest rates and (2) absorb on a continuous basis any excess liquidity from the economy, thereby lowering inflationary pressures and expectations. It is expected that these rates will increase domestic savings (approximately 40% of the money supply is outside the banking system) and allow sustainable credit expansion. It is hoped additionally that such rates will rapidly reduce inflation. The International Monetary Fund (IMF) and World Bank inflation rate objective for present economic policy is to reduce inflation from 37% in 1990 to 5% by 1993. A significant decline in inflation along these lines should bring downward pressure on interest rates and further enhance lending activities of the banking system.

C. Institutional Reform Under FSRP

Institutional reform of the banking system is an important aspect of the FSRP. Two strategies have been undertaken in this area. First, the BOG is to replace virtually all non-performing assets in the banking system. The BOG will clear up bank balance sheets by transferring nonperforming assets (loans that are not performing according to the original terms of the borrower's loan agreement) to the Non-Performing Assets Recovery Trust

(NPART). Banks less encumbered by loan loss reserves are expected to return to a more active lending posture and thus begin to reduce the "liquidity crisis" of the last few years. Under a second strategy, six of the seven government banks have been or are in the process of being restructured. Two of these, the Agricultural Development Bank (ADB) and Ghana Commercial Bank (GCB), have had major roles in financing agriculture in the past. Outward signs of improvement in fund availability as a result of the FSRP are reflected in recently published (1991) profit and loss statements which record significant amounts of extraordinary income. These funds have been made possible by redemption of non-performing assets by the Bank of Ghana under the NPART scheme.

D. Availability of Rural Credit

The total volume of institutional lending to the agricultural sector, including forestry, was estimated at US \$96.0 million in 1988. Formal agricultural lending flows through 11 national banks and their branches, 120 Rural Banks, and about 300 Credit Unions. The rural finance system is thus comprised of about 370 bank locations (see Table V-1), the credit unions, and the informal financial market which includes rotating savings and credit associations and money lenders.

Lending to the agricultural sector among large commercial banks varied, from 25% of portfolio total by the Ghana Commercial Bank (Ghana's largest bank) to 13% for the Barclays Bank. In 1986, the Rural Banks allocated 49% to agriculture, 23.5% to rural trading activities, and the rest to transport, cottage industries, and miscellaneous. The ADB's portfolio similarly concentrates on agriculture, well over half of its resources going to farmer and farmer groups and most of the rest to commercial activities in rural areas.

As shown in Table V-2, lending to agriculture declined *vis-à-vis* other sectors in the 5-year period 1983-87. This decline continued until, by the end of 1990, agriculture's share came to 14%. A portion of this decline results from a reduction of loans to government or public-sector enterprises in agriculture. It also reflects the relaxation in BOG's supervision of credit guidelines. Banks were, in effect, freed to lend to any sector and moved to the more lucrative commercial sector which not only pays a higher interest rate than agriculture (before 1990, 30%-33% vs. 26% for agriculture) but also is considered less risky. By 1991, all BOG guidelines as to sectoral percentages of total loan portfolio and differential interest rates had been liberalized. Share to agriculture may thus further decline.

Table V-1. Regional Distribution of Ghana's Banks^a—Mid-1988

Bank	Greater Accra	Ashanti	Western	Eastern	Central	Volta	Brong Ahafo	Northern	Upper East	Upper West	Total
Ghana Commercial	23	23	14	23	14	22	19	5	4	3	150
Barclays	10	3	3	6	2	3	2	1	0	0	30
Standard Chartered	9	3	5	1	3	0	1	1	1	0	24
Social Security	8	11	6	4	5	1	5	1	2	1	44
Agricultural Development	5	3	2	5	4	3	8	1	2	1	34
National Savings/Credit	8	3	1	2	1	0	2	1	0	0	18
National Investment	2	1	1	1	1	1	1	1	1	0	10
Bank for Housing/ Construction	5	2	0	1	0	0	1	1	0	0	10
Merchant	1	1	1	0	0	0	0	0	0	0	3
Bank of Credit/Commerce	1	0	0	0	0	0	0	0	0	0	1
Rural Banks	6	22	22	22	13	13	18	0	2	2	120
Total	78	72	55	65	43	43	57	12	12	7	444

a. Excludes Ghana Cooperative Bank.

Source: IBRD Rural Finance Project.

Geographic dispersion of banks and deposits is similar to population distribution being primarily concentrated in the southern third of the country. This results in disparity between the banking system locations and fertilizer consuming areas. As shown in Table V-3 the Northern, Upper East, and Upper West Regions consumed well over half of all fertilizer in 1988, but had only 3.7% of deposits nationwide and about 7% of rural branches of the banking system. This indicates that the lending required to sustain private-sector marketing of fertilizer may be inhibited without some attempt to compensate for this regional credit imbalance.

Table V-2. System Loan Portfolio 1983 and 1987

	1983	1987
	----- (%) -----	
Manufacturing	21.7	28.2
Construction	12.7	9.4
Commerce	14.1	24.9
Agriculture	31.9	18.9
Mining	6.7	4.7
Transport	6.3	6.0
Other	6.6	7.9
	100	100

Sources: Technoserve Credit Study, 1987.
IBRD Rural Finance Project, 1989.

Table V-3. Regional Credit Imbalance

	Upper East and West Regions, and Northern Region	Other Ghana
	----- (%) -----	
Population	19.4	80.6
Fertilizer consumption	60	40
Bank branches	7	93
Deposits	3.7	96.3
Loans	3.8	96.2

Source: IBRD Rural Finance Project, 1989.

E. Crop Production Credit

The availability of credit affects fertilizer uptake in periods of significant price increases. In the past, credit schemes have been introduced to cushion farmers as fertilizer subsidies were removed. The results have been mixed, particularly where such schemes targeted all farmers who used fertilizers previously whether they were viable or not. As a result available loan funds—which were significant in amount—were encumbered by marginal farmers' failure to repay. This problem was compounded by "ghost" farmers who received loans though they had little connection to agriculture if any.

Progressive farmers, having seen fertilizer's benefits, will generally continue to purchase it even in periods of significant price increases. They often, however, begin to ration fertilizer which undermines the overall impact of fertilization. As an example, recent interviews with IFAD extension staff revealed that only 20% of project area farmers purchasing fertilizer did so on credit; the rest used their own funds even though prices had escalated dramatically. They did, importantly, cut back on total fertilizer purchased.

Production credit has been a long-standing part of development policy in Ghana. There have been successive generations of credit schemes to finance the production costs of farming. The earliest approaches were based on cooperatives. However, though credit cooperatives have been successful elsewhere, the cooperative movement in Ghana has collapsed. Cooperatives as an approach to credit disbursement are now limited to a few pilot projects to reintroduce them into Ashanti Region (FAO/UNDP) and the Upper Regions (IBRD).

Another approach which has been used for some years is based on the "group loan" concept. In this scheme, farmers within a producing area are organized into a group which becomes the party that applies for and receives loans from banks. Before the group or any individual within the group may receive subsequent credit all members must be paid up. In effect, group pressure is substituted for collateral in providing security of repayment. Most banks and projects involved in providing production credit in Ghana presently use this approach. Among these are Rural Banks, ADB, GCB, Technoserve, Global 2000, and IFAD.

Success with group loans varies. Global 2000 used them successfully early on, but as it expanded its activities loan repayment fell off to a recovery rate of approximately 50% (after a year of collection efforts). Ghana Commercial Bank has also used the group loan concept, but repayment has been so poor that as of 1991, the GCB in the Northern Region had not made loans to farmers for 3 years. IFAD's initial project experience was good. Loan recovery through Bank for Housing and Construction (BHC) was estimated at 100% and ADB at 80%. Subsequently, the recovery rate deteriorated to 80%-84% at BHC and 50% at ADB. Some Rural Banks when recently interviewed estimated repayment at 95%,

but a 1988 World Bank study projected 70% of Rural Banks had 50% of their loans overdue for 3 years or more.

A breakdown of ADB's lending to agriculture given in Table V-4 shows that the bulk of its lending has gone to farmer groups. These groups as of 1988 had countrywide recovery rates of 85%-90% as opposed to 60% for individual beneficiaries.

Table V-4. Characteristics of ADB's Lending to Agriculture, 1983-87

	1983	1985	1987
Beneficiaries, % of applicants	36	25	Not available
Individuals, % of total beneficiaries	5	10	15
Farmer groups as % of total beneficiaries	95	90	85
Average loan size, individual farmer, α	-	-	64,000
Average loan size, farmer in group, α	-	-	12,500

Source: Unpublished paper, Chief of Research and Planning, Agricultural Development Board.

A survey of banks who loan to farmers indicates that they will continue to use the farmer 'group loan' approach. However, there is now a consensus that, for production credit schemes based on this approach to work, the groups must be comprised of "real" farmers whose identity and agricultural standing and capability have been fully verified and appraised. In addition, there seems to have been a shift in production loan emphasis. Target groups for credit schemes have been narrowed to those farmers or farmer groups likely to be financially successful. It is felt that, in the past, production credit schemes have been unsuccessful by trying to provide loans to all farmers.

F. Commercial Credit for Agricultural Input Companies

As the Government has only recently opened up the fertilizer and seed market to private trade, banks have had little experience in lending to seed and fertilizer retailers. Banks do, however, loan to commercial entities which overall as a category averaged about 25% of the system's loan portfolio during the years 1985-87. Both the ADB and Rural Banks have portfolio guidelines that provide for agricultural trade.

Based on recent interviews, the most immediate constraint to lending for retailer establishments is likely to be the banks' unwillingness to finance private businessmen trying to enter the seed and fertilizer industry if they are unsure that government will actually privatize the business. Until banking officials are convinced by formal policy commitment

by the government, the major credit effort required to finance seed and fertilizer marketing will be slow in developing.

A second problem affects retailers in rural areas. These retailers, many of whom will be small in size, suffer from the same sort of collateral problems as farmers. This constraint is critical. Particularly in the early stages of privatization, collateral will be necessary to secure working capital loans for retailers until such time as long-term working relationships between the parties are solidified.

The banks are considering various approaches to dealing with the collateral problem. One approach is field warehousing. Banks are often willing to finance trading activities using inventory as collateral. Ghanaian banks, even in the rural areas, are familiar with this financing technique but are constrained in using it because of lack of bank-controlled warehousing. Development of infrastructure to provide this facility was in the restructuring plan of the ADB, but financial constraints precluded it from investing in such warehousing. Other banks have similar infrastructural limitations.

Another approach being considered is the credibility of seed and fertilizer retailers *vis-à-vis* bankers would be a guaranteed loan scheme in which the BOG, for a transitional period, guaranteed some percentage (say 60%) of any loan given for working capital. Such a scheme would also provide incentives to reduce initial collateral requirements for seed and fertilizer entrepreneurs.

G. Rural Financial Sector Reform

In keeping with the overall reform of the financial sector, the World Bank has instituted the Rural Finance Project to both restructure and recapitalize the rural financial sector. The Rural Finance Project appraised in 1989 has two components: an institution building program and a line of credit to the rural financial sector. The institution building component includes three major areas of focus. The first involves the creation of a Rural Finance Department within the Bank of Ghana. The second area consists of a restructuring of the Rural Banks. All 120 Rural Banks are to be audited by International Development Association (IDA)-approved firms and subsequently restructured. This restructuring will include upgrading accounting systems, intensifying collection campaigns of past due accounts, and regularizing loan accounts by renegotiation and rescheduling. Liberalizing portfolio guidelines by the BOG will allow Rural Banks to invest more freely in commercial enterprises connected with agriculture such as seed and fertilizer marketing. The project would also train agricultural loan officers in loan appraisal techniques and finance the purchase of motorcycles to increase their mobility in rural areas. The third area of institution building is to strengthen the Association of Rural Banks (ARB).

The credit line component of the Rural Finance Project is expected to provide up to the equivalent of US \$28 million (supported in part by matching funds) over a 3-year period to eligible banks. Those to participate include: Rural Banks, Credit Unions, ADB, and rural branches of Ghana Commercial Bank, Barclays and Standard Chartered. The credit will provide financing for all viable rural enterprises, except real estate and "speculative" trades. Among the specific financing targets are agricultural inputs.

H. Constraints to Commercial and Crop Production Credit

There are many problems with the rural financial sector which affect banks' ability to finance trade in agricultural inputs. The most important of these are:

1. Low mobilization of deposits in rural areas/limitation on loanable funds.
2. Mismanagement of rural branches.
 - a. Poor management of operations and misappropriation of funds.
 - b. Lack of adequate loan appraisal.
 - c. Inappropriate loan terms and conditions offered farmers.
3. Problems in collateralizing loans.
 - a. Value of rural land and buildings not easily appraised.
 - b. Existing land tenure limits banks' recourse to collateralized real estate.
4. Inadequate geographic coverage of banking network.
5. Inherent risk of agricultural loans.
6. Farmer loan repayments.
 - a. Lack of farmer familiarity with financial institutions.
 - b. Farmer attitude towards repayment of 'government' loans.
7. Inadequate credit information.
 - a. Tardy data compilation and analysis by banks (most recent for Bank of Ghana, 1986; ADB, 1983).
 - b. Lack of shared information among banks and various production loan schemes.
 - c. Inadequate data collection on credit for Ghana's rural economy.

VI. Importance of Privatization

A. Introduction

The GOG recognizes that private-sector involvement in seed and fertilizer marketing is necessary for increased efficiency. During the introduction stages of seed and fertilizer market development, governments often subsidize the prices. As the demand for seed and fertilizer increases, the subsidy burden increases and the motivation for increasing distribution and sales of the products decreases. In contrast, a privatized industry will continue to expand the markets for seed and fertilizers as long as it is profitable to do so. A good example of private industry penetrating markets is how cement and agricultural chemicals and many other items are freely available in the village markets. By comparison farmers often have to travel several kilometers and make more than one trip to purchase seed and fertilizers. For example, farmers in the village of Anyinam have to travel 18 miles to purchase seed and fertilizers. The added cost and problems associated with making the purchase prevent many farmers from using improved seed and fertilizers. Their yields are thus reduced and their profits suffer. So long as it is profitable to do so, private firms will make these important crop production inputs available in more farmer markets than a public-sector organization. Moreover, private firms will seek to promote increased use of improved seed and fertilizer through promotional activities and farmer services.

When the seed and fertilizer industries are privatized, Government benefits. The subsidy and personnel drain will be eliminated. Additional tax revenue can be collected from companies in the seed and fertilizer industry. Farmers will benefit because more services are provided in the local markets. The use of improved seed and fertilizers will increase yields and profits. The national GDP will be enhanced with the generation of more revenue and less expenditure on subsidies. Finally, the consumer benefits from a better supply of food, the price of which will be maintained at a respectable level due to increased crop production and competition.

Another important benefit from privatization of the seed and fertilizer sectors is that it can serve as an example of Ghana's commitment to a free market economy. This example of a privatized sector will encourage industry to invest in the agricultural sector. Investments are needed for adding value to agricultural products such as seed and fertilizer, food processing, and new varieties of crops for the domestic and export markets.

Another benefit of privatizing the seed and fertilizer sectors is an attitude change at the farm level. Private organizations are profit oriented. The message that will be transferred to farmers is "farm for a profit." The advice will be to expand production vertically—more yields per unit of land, and horizontally—by increasing area and operations. The

attitude change will take time but it will happen. The attitude change from subsistence to profitable farming will be a byproduct of the privatization process.

B. The Private-Sector Concept

The management procedures, methods, and style employed by private business is the model for privatization. The private-sector concept establishes guidelines and procedures for operating a business.

1. Privatization

Marketing as employed by the modern private sector is often misunderstood. In many situations governments talk about privatizing the seed and fertilizer business but fail to allow the full process to take place. There cannot be a degree of privatization. In the long term the full process must be in place or the entire effort will fail. One of the first stumbling blocks is in marketing. A privatized company or organization must be allowed freedom to carry out its own marketing and determine its own destiny. Seed and fertilizer marketing can be described as all business activities involved in the flow of goods and services from the producer to the consumer, including the elements of sales forecasting, determining which products to offer, providing place utility, product pricing, and promotion.

These activities are viewed from the position of satisfying the end user's (farmers) demand for fertilizers, and the performance of these functions in an order constitutes the marketing system.

2. Integrated System

A typical organizational structure of a private-sector agrobusiness firm is conceptualized in Figure VI-1. The system is integrated by functions and is centrally managed. The management functions of determining what products to market, the distribution network, prices, and promotion are determined within the system. The organization is autonomous and has authority, responsibility, and accountability for all of its activities. The ability to be self-sufficient and expand operations is generated from margins made from the sales of products and services. The staffing of an organization will depend upon the size of market to be served and the sales volume. Additional staff will be added as needed to support the firm's business operations.

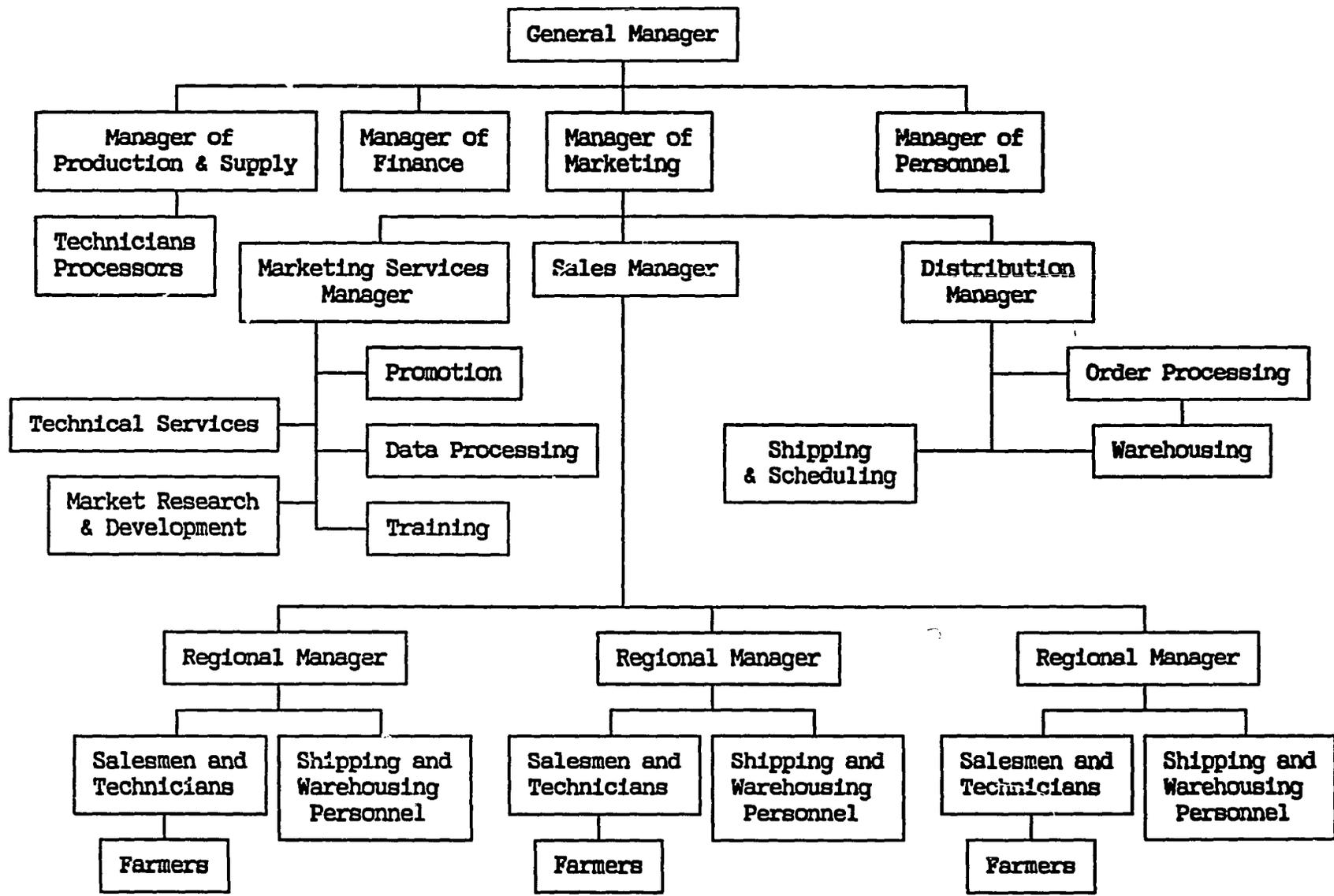


Figure VI-1. An Organizational Structure of a Centrally Manager Integrated Private Sector Agrobusiness.

A private-sector agrobusiness will develop its own network of retailers and channels of distribution to serve its retailers. Appropriate channels of distribution to supply a timely supply of products in the most cost-effective manner to the retailer will be selected. There is no universally best channel system. For example, in some situations wholesalers may be used to reach retailers in remote areas. In some cases the retailers may be supplied directly by the agrobusiness. In limited situations farmers could be served directly by the company.

The retailer is the connecting link between the company (supply) and the farmer (consumer). The private-sector agrobusiness spends a great deal of time and money in selecting, training, and serving its retailers. Most agrobusinesses will have a list of criteria that a retailer must fulfill in order to become a retailer. The criteria include such items as a place of business with warehousing facilities in an area suitable to serve the farmers, willing and capable of transferring technology on cropping practices to farmers, well respected by farmers, and resources to carry out the retail functions. In a developing market situation the retailer may establish satellite stores where products are offered to farmers on market days or selected days during the crop growing season. The number of retailers an agrobusiness will have depends on the size of the market to be served. A private-sector agrobusiness will recognize that it is only as good as its retail network selected and developed to serve the farmer.

Principal characteristics of an integrated centrally managed private-sector agrobusiness are:

- a. An autonomous organization having authority, responsibility, and accountability for all activities.
- b. Authority and accountability are delegated to the employee responsible for the activity.
- c. Organizational or company objectives are specified.
- d. Detailed employee job descriptions with objectives and scheduled activities.
- e. The right to hire, dismiss, and promote personnel based on job performance.
- f. Cost-effective programs (budgets) generate a desired profit level.
- g. The system is self-supporting through profits generated.
- h. The retail network satisfies customer on an ongoing basis.
- i. Management anticipates and adjusts for external factors (i.e., social, political, cultural, economic, etc.) and directs operations to achieve objectives while striving to bring about change for a better business environment.
- j. Management can respond quickly to problems and provide guidelines for solutions.
- k. Constraints to effective communication are minimized.
- l. Have intensive programs of employee training and development.

3. Nonintegrated System

For comparison purposes and to show why the private-sector concept is more efficient and preferred, a nonintegrated system is cited. Governments or public-sector organizations normally operate with a nonintegrated decentralized managed system. In this system operational decisions are made within different organizations and even ministries. For example the Ministry of Agriculture could be responsible for purchasing a product, the Ministry of Transportation the delivery to different locations, while the Ministry of Finance sets the prices and collects the monies. Planning and execution of the business principles are usually not well coordinated. It is almost impossible for a nonintegrated system to function effectively.

The principal characteristics of a nonintegrated system would include:

- a. Business functions are usually not well coordinated.
- b. Coordination of functions are not performed by a manager whose sole interest is the business.
- c. Authority and responsibility for carrying out functions are often divided among personnel.
- d. Accountability is often not assigned to personnel having responsibility for the functions.
- e. Authority and accountability are often not delegated to the individual having responsibility for each function.
- f. Job descriptions are usually not specific and often employees have other time-consuming responsibilities.
- g. Hiring, promoting, and dismissing employees are usually controlled by civil service regulations and not controlled by business conditions and the marketing system.
- h. Cost effectiveness is usually not a major concern.
- i. The system is not self-supporting.
- j. Organization and marketing objectives are not usually made due to the monopolistic nature of the system.
- k. Retailers are usually stockists and do not offer the full array of retail programs and often cannot provide a continuous feedback of market requirements.
- l. Communication across organizational lines and Ministries causes delays in carrying out activities.
- m. Personnel development for the system is often lacking.

4. Method of Ownership

In a private-sector business, operational efficiency is essential. An integrated organizational structure facilitates improved efficiency. Communications in the organization are efficient.

Many times the method of ownership gets blamed with the inefficiency in carrying out functions instead of the management and organizational structure. It is not necessary for different methods of ownership to have inefficient organizational structures and management unless they elect to do so. Cooperatives, for example, can employ private-sector business principles. Corporations with shareholders as well as individual firms utilize the private-sector system of doing business. The private-sector concept is the only one that works efficiently over the longer term.

C. Government Commitment to Privatization

The GOG is committed to transferring seed and fertilizer marketing responsibilities to the private sector. Although there is neither a written plan nor official decree for privatization, there is a common understanding among MOA officials that the Government will continue to withdraw from the business. Recent actions taken to facilitate the transfer include: (1) closure of the Ghana Seed Company, (2) the sale of MOA fertilizer stocks and use rights to its fertilizer depots, (3) the decontrol of fertilizer prices, and (4) the GOG's encouragement for and the registration and licensing of 650 private-sector fertilizer retailers (Appendix V). In addition, during April 1991 the MOA and USAID jointly organized a seed and fertilizer workshop entitled "Private Sector Participation in High Quality Seed Production for Increased Crop Yields." As a part of the program, MOA officials addressed private-sector fertilizer business people to reconfirm the government's intentions to withdraw from the fertilizer business and to outline the procedure for the auction of government-held fertilizer assets.

VII. Role of Public and Private Sectors

A. Introduction

The advantage of having a fertilizer and seed industry in the hands of the private sector has been adequately addressed. Under such a system some degree of government involvement will continue to be needed. This involvement will be of a supportive nature, to encourage private-sector involvement in the business, to promote competition and the benefits derived therefrom, and to protect national and consumer interests.

A brief overview of the roles of the GOG and the private sector is shown in Table VII-1 and VII-2. In general the GOG's responsibilities will be as follows.

B. Role of Public Sector

1. Policy formulation.
2. Creating and maintaining a proper environment for private-sector growth and competition.
3. Monitoring the performance and development of the industries.
4. Providing extension services to promote agricultural development.
5. Assisting with training.
6. Monitoring environmental issues.
7. Quality control.
8. Continuing development of improved breeder seed varieties.
9. Developing and maintaining a seed and fertilizer information unit (SFIU).
10. Facilitating the availability of credit to the seed and fertilizer industries.

C. Role of Private Sector

The role of the private sector will be to deal with the day-to-day business decisions, including foundation seed development and production, fertilizer procurement, physical distribution, pricing, promotion, availability of credit, and training of its personnel. Only when the private sector has the authority to make such decisions and to enjoy the consequences of its actions will the benefits of privatization be fully realized.

Table VII-1. Role of the Public and Private Sectors in a Privatized Seed Industry

Function	Private	Public
Policy formulation	*	*
Supply of: Seeds:		
Breeder		**
Foundation	*	**
Certified	*	
Quality of seeds	*	*
Distribution	*	
Pricing	*	
Promotion	*	*
Credit	*	*
Training	*	*
Management information system		*
Environmental issues		*

a. Private-sector plant breeding programs should be allowed in future.

b. In the first 2 years the Ghana Grains and Legumes Development Board would continue to produce foundation seeds but would stop producing foundation seeds at the end of the second year of the project.

Table VII-2. Role of the Public and Private Sectors in a Privatized Fertilizer Industry

Function	Private	Public
Policy formulation		*
Procurement	*	**
Coordination of donor aid		*
Quality control	*	*
Distribution	*	
Pricing	*	
Promotion	*	*
Credit	*	*
Training	*	*
Management information system		*
Environmental issues		*

a. During years 1 and 2 the Government will continue to import fertilizers. In year 3 and thereafter, importation will be a private-sector function.

VIII. Plan for Continuing the Privatization Process

A. Introduction

The model for a private-sector type of business organization is shown in Figure VI-1. It will take a minimum of 2 years to develop an organization of this nature. The number of organizations that will emerge will depend upon:

1. How quickly the GOG can divest itself of the seed and fertilizer business.
2. How profitable the seed, fertilizer, and other agricultural inputs can become to the organizations.
3. The resources available to the organizations. Instead of having two or three large organizations serving the entire country it may be necessary to have several smaller organizations. The number of private companies or organizations that will be required and available for development will be determined as the privatization process unfolds.

B. The Transition Process

A number of options were considered for continuing the transition to a fully privatized seed and fertilizer industry including (1) an immediate transfer of all fertilizer and seed assets and functions to the private sector and (2) a variety of phased approaches. An immediate transfer of all fertilizer and seed marketing functions to the private sector will involve an immediate 60%-70% increase in fertilizer prices. This would result in a major drop in fertilizer use which may be politically unacceptable and may create an unfavorable attitude toward privatization. Further, GOG fertilizer/stocks would continue to remain unsold. In order to facilitate the transition process, a phased transfer of assets and fertilizer and seed business functions was identified as being the most appropriate. The initial thrust of privatization for fertilizers will be at the retail level. For seeds, the initial focus will be on increasing private-sector involvement in the production of certified seed and, where feasible, foundation seed. Seed retailing will be a private-sector function.

1. Short-Term Government of Ghana Involvement

The reasons for encouraging continued short-term (1-2 year) involvement of the GOG in the seed and fertilizer-sector operations are as follows:

- a. Private-sector business people remain unsure of the GOG's commitment to privatization and are therefore unwilling to confirm that they will import fertilizers.
- b. Once the existing fertilizer stock is depleted, new imports, if priced on a remunerative basis, will be at least 50%-70% higher than current price levels. Such an increase is justifiable, and by having the GOG handle importation, the private sector will to some degree be protected from farmer complaints of profiteering.

- c. The FASCOMS have an extensive network, and assumption of its assets will involve a major financial investment. Because of the small market size and financial resource limitations of investors, it appears that only gradual selloff of MOA and FASCOM assets is likely. A sudden dismantling of MOA and FASCOM would mean that many farmers would not have access to fertilizers.
- d. The private sector is not experienced in running a fertilizer business. Time will be required for private firms to understand the fertilizer business and gain competence in carrying out marketing functions.
- e. It will take the private sector at least 1 and probably 2 years to develop the technical expertise needed to produce foundation seed.
- f. To ensure foundation seed availability the GOG on a limited basis will continue to produce foundation seed for 2 additional years.

Based upon the pros and cons of the various approaches that could be used to continue privatization, it appears that a phased approach will minimize the disruption in fertilizer and seed supply at the farm level and allow the best chance of success in achieving a sustainable, privatized system.⁵ Details for carrying out the transitional activities (e.g., lease-purchase arrangements for fertilizer depots, auctioning of assets, etc.) have been purposefully avoided. The Privatization Advisory Team (PAT) needs the flexibility to work out the details on a practical basis. However, the general sequencing of activities is illustrated in Table VIII-1 with details provided later in this section.

2. Priority of Actions

The action programs indicated in Table VIII-1, the training schedule in Table VIII-7, and the staffing schedule in Table VIII-8 are critical components of an integrated approach to privatizing the seed and fertilizer industries. Each of these action programs is an essential component to the privatization effort. It is impossible to indicate which is the most important. Some are:

- a. An efficient fertilizer industry without a system to provide improved seed is not economically attractive.
- b. The selection of potential private retailers without training and access to credit is not a workable concept.
- c. The development of a privatized seed and fertilizer system without GOG policy support is also nonworkable.

5. It was mentioned to the study team by USAID staff that there was a possibility of utilizing USAID counterpart funds for paying retrenchment benefits to FASCOM employees to facilitate privatization of FASCOM.

Table VIII-1. Transition Time and Actions Required to Privatize the Seed and Fertilizer Industries

Period	Actions	Responsibility
Initial Actions 1991	(a) MOA to abandon discount schedule and raise wholesale fertilizer prices by 25%, effective immediately.	MOA
	(b) In third quarter 1991 MOA to tender fertilizers necessary for 1991 based upon fertilizer sales forecast less in-country stocks.	MOA (PAT Short-Term Assistance)
	(c) Enact freedom of marketing legislation.	MOA
	(d) FASCOM to cease expansion of retail network.	MOA/FASCOM
Year 1^a 1992	(a) PAT in-country, establish office and staff	MOA/PAT
	(b) Complete plans for phasing the government out of the seed and fertilizer business. ^b	MOA/FASCOM/PAT
	(c) Obtain a fair market value appraisal of FASCOM facilities and commence privatization of their operations.	MOA/FASCOM
	(d) Continue selloff of MOA/FASCOM fertilizer stocks.	MOA/FASCOM
	(e) Identify potential private-sector organizations (companies) to establish seed and fertilizer business.	PAT/MOA
	(f) Finalize government policy necessary to privatize industries.	MOA/PAT
	(g) Assist CRI with breeder seed production and start processing programs at Nyankpala and Fumesua.	PAT/CIDA/GTZ

(Continued)

Table VIII-1. Transition Time and Actions Required to Privatize the Seed and Fertilizer Industries (Continued)

Period	Actions	Responsibility
Year 1 1992 (Cont'd)	(h) Continue to assist private retailers to begin operations.	MOA/PAT
	(i) Finalize training programs and conduct courses for: <ul style="list-style-type: none"> ■ Retailers ■ Extension staff ■ Seed technologists ■ Fertilizer researchers 	PAT
	(j) Complete plans for facilitating credit to seed and fertilizer organizations, wholesalers, and farmers and bring onto team a national credit specialist.	PAT/Rural Credit Committee/Agricultural Lenders Forums
	(k) Commence formation of a seed and fertilizer information unit (SFIU).	PAT/MOA
	(l) Review and update seed and fertilizer recommendations.	CRI/CSD/PAT
	(m) Provide equipment for the foundation seed project	PAT/CIDA
	(n) Complete formation of the national seed committee.	PAT/NSS
	(o) Formation of a seed growers' association.	PAT/NSS
	(p) MOA/FASCOM to primarily act as wholesalers and set wholesale price based upon full cost.	MOA
	(q) Commence pilot project to assist banks with field warehousing.	PAT/MOA

(Continued)

Table VIII-1. Transition Time and Actions Required to Privatize the Seed and Fertilizer Industries (Continued)

Period	Actions	Responsibility
Year 2 1993	(a) MOA/FASCOM to price fertilizer on actual cost basis and continue to wholesale.	MOA/FASCOM/PAT
	(b) Continue to work with private-sector organizations (companies).	PAT/MOA
	(c) Continue work with private retailers.	PAT
	(d) Conduct training courses for: <ul style="list-style-type: none"> ■ New retailers ■ Refresher courses for old retailers ■ Private-sector managers ■ Seed technologists ■ SFIU staff ■ Fertilizer researchers 	PAT
	(e) Complete development of the foundation seed project.	PAT/CIDA
	(f) Continue activities related to the development of the seed growers' association.	PAT/NSS
	(g) Assist SFIU to become fully operational and complete seed and fertilizer surveys on (1) inventories, (2) consumption, (3) private-sector retailers, and (4) prices, etc.	MOA/PAT
	(h) Conduct a USAID mid-term project progress report.	PAT
	(i) Finalize a mass media promotion program informing farmers on the value of using improved seed and fertilizer and farming for profit.	PAT
	(j) Conduct survey to determine suitability of seed and fertilizer packaging.	PAT

(Continued)

Table VIII-1. Transition Time and Actions Required to Privatize the Seed and Fertilizer Industries (Continued)

Period	Actions	Responsibility
Year 3 1994	(a) MOA/FASCOM to complete phasing out seed and fertilizer business. Selloff of last stocks and develop lease-purchase agreements for facilities (e.g., depots).	MOA/FASCOM
	(b) Assist selected private-sector organization in procurement and marketing activities.	PAT
	(c) Conduct training courses for: <ul style="list-style-type: none"> ■ Retailers ■ Wholesalers ■ Private-sector management ■ Extension service ■ Fertilizer procurement ■ SFIU staff ■ Seed technology ■ Bankers 	PAT
	(d) Carry out the farmer mass media program on the use of improved seed and fertilizers.	PAT/MOA/ADB
	(e) Assess field warehousing pilot project.	PAT/MOA/ADB
	(f) Assist retailers with farmer educational programs and promotional materials.	PAT
Year 4 1995	(a) Continue to assist private organizations with demand forecasting, procurement, and downstream marketing.	PAT
	(b) Conduct training courses for: <ul style="list-style-type: none"> ■ Wholesalers ■ Retailers ■ Extension service ■ Private-sector management ■ Seed producers ■ Bankers 	PAT

(Continued)

Table VIII-1. Transition Time and Actions Required to Privatize the Seed and Fertilizer Industries (Continued)

Period	Actions	Responsibility
Year 4 1995	(c) Continue mass media promotional program.	PAT
(Cont'd)	(d) Assist SFIU with survey to determine improved seed and fertilizer use by farmer groups and to monitor private-sector performance.	SFIU/MOA/PAT
	(e) Continue to work with retailers.	PAT
	(f) Local private seed companies start operating.	PAT
	(g) Complete USAID end of project report.	PAT
	(h) PAT demobilization.	PAT

a. Year 1 is assumed to be 1992 for the privatization advisory team (PAT) to become functional.

b. Government breeder seed work will continue.

The level of activity within each essential component of the action plan depends upon the speed with which resources are available and policy is enacted and the performance efficiency of programmed actions. To some degree, the action programs are sequenced in an order of priority. However, as the system for privatization unfolds, there may be need or an opportunity to adjust the degree of effort in each component. For example, it may not be necessary for the extension agent to receive a refresher course after they have the basic seed and fertilizer marketing course. Another example could be that the amount of staffing would need to be increased or decreased based on implementation experiences. Flexibility of implementing the privatized system is essential. In effect, the PAT will prioritize the action programs as they are implemented.

Phasing the GOG out of the seed and fertilizer business is scheduled to be completed at the end of 1995. It is estimated that 4 years will be required to develop the private-sector organizations and their infrastructure necessary to cover all of the major farming areas in Ghana.

As an immediate step, it is recommended that the GOG raise the price of fertilizers effective with the 1991 cropping season. As pointed out in the current fertilizer situation, some of the estimated 60,000 tons of product in stock has been there for 2-3 years. During this period international prices have increased while there has been a devaluation of the cedi. The next imported fertilizers (e.g., 15-15-15) on an actual cost basis will have to sell for around ₵7,000 per bag for retailers to cover their cost and provide a fair margin. The jump from ₵4,400 to ₵7,000 per 50-kg bag will come as another major shock to farmers. To soften the shock, it is recommended that the price of all fertilizers for the current fertilizer season be increased by 25% (e.g., the retail price of urea, ammonium sulfate, and 15-15-15 would increase to ₵5,250, ₵4,200, and ₵5,250, respectively). In Year 2-1993 the plan calls for the MOA and FASCOM to wholesale fertilizers at their full cost basis so that the subsidy will be completely eliminated. At the retail level, prices will be market based and determined by costs and competition.

C. The Policy Environment

A fundamental step in the privatization process is for the Government of Ghana (GOG) to ensure a conducive policy environment for private-sector involvement in the seed and fertilizer industries. The GOG should provide leadership in policy formulation and implementation, quality control, and information management and dissemination; it should also provide support, encouragement, and incentives for the needed investment by the private sector in seed and fertilizer facilities. While fulfilling these roles, the GOG should avoid the temptation of getting involved in the production and marketing of seed

and fertilizers in the short to medium term when the private-sector participants will pass through a transitional and learning period of trial and error.

To create a conducive environment for private-sector involvement in the seed and fertilizer industry, the GOG should perform the following functions:

1. Policy Formulation and Implementation

Several governmental policies will have direct and indirect impacts on the operations in the seed and fertilizer industries. Some of the important policies likely to impact these industries are: macroeconomic, fiscal, pricing, organizational, and marketing. The GOG should ensure that the formulation and implementation of these policies provide a positive support to these industries as explained below and summarized in Table VIII-2.

a. Marketing Policy and Law

The prolonged involvement of GOG in the seed and fertilizer industries in the past has created a crisis of confidence in the private sector. That is, in spite of the Government's declaration to privatize the seed and fertilizer business, the private-sector participants are not sure whether the Government is really planning to pull out and let the private sector come in; hence to restore confidence and strengthen private-sector participation, the GOG should enact a legislation entitled "The Freedom of Marketing of Agricultural Inputs Act." The act should clearly state that the private-sector participants have freedom of entry into or exit from these subsectors.

b. Macroeconomic Policy

Ghana does not produce any fertilizer products, and therefore relies on imports to meet its fertilizer requirements. As fertilizer imports are determined by the availability of foreign exchange, the GOG should ensure that foreign exchange is available in adequate quantity to those private-sector participants who want to import fertilizers in the future.

There are two aspects of this recommendation. First, as long as the current policy of free foreign exchange market continues, the GOG should provide a limited guarantee to those banks that are willing to finance fertilizer imports. Second, if the current policy of free foreign exchange market is discontinued for unavoidable reasons, then the GOG should allocate foreign exchange resources for fertilizer imports on a priority basis.

Table VIII-2. The Policy Environment

Policy/Support/Regulation	Objective	Action
A. Policies		
1. Marketing Policy: The Law	Restore confidence of private-sector participants in competitive marketing	Enact a legislation entitled "The Freedom of Marketing of Agricultural Inputs Act"
2. Macroeconomic Policy	Ensure adequate supply of foreign exchange for fertilizer imports	Provide credit guarantee to the banks who lend foreign exchange for fertilizer imports
3. Fiscal Policy		
(a) Tariffs	Promote profitable marketing and use of seed and fertilizers at the farm level	Continue the existing policy of no tariffs on import or sale of fertilizers
(b) Incentives	Promote investment in seed and fertilizer facilities	Provide tax holidays, tax rebates, and other concessions
4. Pricing Policy	Promote efficiency in marketing of seed and fertilizers	Decontrol all prices immediately
5. Organizational	Promote equity and efficiency in fertilizer and seed marketing	Eliminate all subsidies on government-owned and supported organizations by December 31, 1991
	Promote self-sustaining organizations	Make all organizations involved in fertilizer and seed marketing self-supporting
6. Anti-Trust	Develop competitive marketing system	Monitor the situation to ensure that there are no monopolistic alliances among seed and fertilizer sellers

(Continued)

Table VIII-2. The Policy Environment (Continued)

Policy/Support/Regulation	Objective	Action
B. Support and Regulation		
1. Credit	Facilitate the entry of small retailers in fertilizer and seed marketing	Provide credit guarantee to banks that advance loans to retailers
2. Quality Control	Ensure good quality fertilizer products and seed to the farming community	Enact legislation for quality control for seed and fertilizer Establish agencies to enforce standards for quality control
3. Storage	Facilitate adequate and timely availability of seed and fertilizers	Lease government-owned warehouses and storage facilities to private retailers at an appropriate (shadow) rental rate
4. Research and Extension	Promote appropriate seed and fertilizer products and technologies	Strengthen research facilities
	Disseminate information about seed and fertilizer products to farmers and create demand for seed and fertilizers	Reorient extension efforts towards knowledge dissemination and demand creation Develop collaboration between research and extension Develop collaboration between extension and retailers
5. Information Management and Dissemination	Provide accurate and timely information about activities related to seed and fertilizers	Establish an SFIU

c. Fiscal Policy

Two aspects of GOG's fiscal policy will affect the operations in the fertilizer and seed industry. The first aspect deals with tariffs, and the second deals with incentives.

(i) Tariffs

No tariffs are currently imposed on the import or sale of fertilizer products in Ghana. It is recommended that this policy be continued for two reasons: (1) The removal of fertilizer subsidies and the depreciation of the cedi have already resulted in higher fertilizer prices for the farmers. Any tariffs on such high prices will tend to make fertilizer use less profitable, especially for small farmers. (2) The withdrawal of the Government from fertilizer marketing activities will lead to the removal of implicit (hidden) subsidies (rent-free warehouses, interest-free loans enjoyed by government-related agencies, etc.), and therefore will further increase prices for distributors and farmers in the short term. Any tariff on such prices may discourage private-sector participants from entering the market.

(ii) Incentives

The entry of private-sector participants in these industries will require investment in both fixed and working capital, although the magnitude of such investment will vary from a small amount for a retailer to a large amount for an importer or wholesaler. To encourage such investments, the GOG should provide incentives in the form of tax holidays and tax rebates for a period of 3-5 years. These incentives should be consistent with the industrial and investment policy of Ghana.

d. Pricing Policy

In a competitive marketing system, prices of products are determined by the forces of supply and demand. In such a system, prices also provide signals for entry into or exit from a particular market. Inefficient firms leave the market, whereas efficient firms continue to exist or enter the market. The freedom of marketing requires the freedom of product selection, pricing, promotion, and distribution. The freedom of marketing without the freedom of pricing is unlikely to attract private-sector participants in these industries. Hence, the Government of Ghana should cease to control all seed and fertilizer prices. For crop produce the GOG should ensure remunerative prices so that incentive to adopt new technology continues.

e. Organizational Policy

The study team reviewed the efficiency and suitability of various organizations currently involved in importing and marketing fertilizers. To encourage private-sector

participation and, more importantly, to promote efficiency and equity in fertilizer marketing, the GOG should divest all government funded and subsidized organizations as soon as possible but no later than December 31, 1994. In 1995, all organizations involved in fertilizer marketing should be self-supporting and self-sustaining.

f. Antitrust Policy

A competitive market system in the long term will provide improved efficiency, leading to lower prices, good-quality product, timely supply, and quality products only if there are many buyers and sellers. Because of the small size of Ghana's fertilizer market there is a possibility that the number of importers may be only one (monopoly) or two (duopoly). The Government of Ghana should continuously monitor the situation and ensure that an adequate number of importers and sellers are always present in the market. If the situation becomes monopolistic, the government should introduce plausible regulatory mechanisms to produce socially desirable results. In such a situation, the fertilizer industry can be treated like utilities (electricity and water) and could be monitored as such.

2. Government Support and Regulation

In addition to formulating and implementing policies, the GOG should also provide support and perform regulatory functions to ensure efficient functioning of the competitive market system. Some of the important areas where governmental support and regulation would be required are described below.

a. Credit

Getting adequate credit from the banking sector is the major constraint to participation in seed and fertilizer marketing. Bankers are hesitant to advance credit to small retailers without suitable collateral. Hence, it is recommended that the GOG provide a limited credit guarantee for qualifying retailers for a period of 3-5 years. Guarantees would facilitate the establishment of goodwill and creditworthiness of these retailers. These guarantees should be in the range of 60%-80% of the loan amount. This will also help the industry to develop its network of fertilizer retailers by minimizing risks.

b. Quality Control

To protect the interests of the farming community and society, the Government of Ghana should establish laws, standards, and procedures to ensure good-quality seed and fertilizers. It should also establish the necessary agencies to enforce such laws, standards, and procedures.

c. Storage

Adequate and quality storage and warehousing facilities are necessary for ensuring good-quality seed and fertilizer products to farmers. Because of heavy capital requirements of these facilities, many private retailers will not be able to construct such facilities. On the other hand, the GOG has already built these facilities. Hence, the GOG should enact legislation to allow the leasing of these facilities to seed and fertilizer retailers at an appropriate rental charge.

d. Research and Extension

To support orderly development of markets for seed and fertilizers, the GOG should provide adequate research and extension support. Because of heavy costs of seed and fertilizer research, this function should remain basically with government-funded research institutes. This is not to suggest that the private sector should not get involved in research. Private-sector organizations would be permitted to do research if they so desire. In the field of extension, the GOG and private-sector retailers should work in close collaboration, so that there is no conflict between product supply and demand. Also, the collaboration between research and extension should be improved. In order to improve fertilizer recommendations, soil surveys should be conducted to assess the nutrient status of soils in each region.

e. Information Management and Dissemination

The GOG has an important role to play in monitoring seed and fertilizer market developments and in maintaining appropriate policies. In supplying the much-needed data and analysis, the GOG should establish an SFIU. The unit should maintain information on prices, imports, fertilizer stocks, sales and consumption, seed production, etc. The unit should also publish a monthly bulletin containing information on these variables and the fertilizer and seed situation outlook in various parts of the country. Such information should be made available to appropriate GOG officials, donors, and fertilizer and seed sector officials.

D. Institutional Linkages

USAID-Seed and Fertilizer Privatization Project (SFPP) should liaise with a number of entities and institutions. The rationale for the linkages is to promote complementary agricultural development projects. The key institutions that the privatization project should be linked with include:

1. Donor Community

An informal association of donors with fertilizer-related programs should be formed. This idea has been discussed with donors in Ghana and was very favorably received. The donors could meet monthly to discuss and coordinate their programs.

Special emphasis will be given to interacting with such organizations as Global 2000, The Canadian Grain Development Project (CIDA), German (GTZ) and French (IRAT) Research Development Projects for sorghum, millet, and rice, respectively, and the European Economic Communities (EEC) on agricultural production training. These organizations have programs that may impact the need for and use of improved seed, and the development of a mature fertilizer marketing and use system.

In addition, under the fertilizer policy research project (funded by USAID/Washington), a fertilizer policy research group has been established at the Institute of Social, Statistical, and Economic Research, University of Ghana. This group will conduct research on the issues related to fertilizer-sector development in Ghana. The group will work in close collaboration with the policymakers, researchers, and private- and public-sector specialists involved in developing and promoting efficient and environmentally safe fertilizer use. This group will act as a bridge between the universities, research institutes, policymakers, and fertilizer-sector specialists. The group will also interact with the project team in assessing the impacts of various policy changes on developing a competitive fertilizer and seed marketing system.

2. Ministry of Agriculture

The Crop Services Department, Grain and Legumes Development Board, Extension Service Department, Crops Research Institute, Ghana Cocoa Board, and FASCOM will be linked to the USAID privatization project on an ongoing basis since each is now involved in the seed and fertilizer business. The PAT will work with each Government organization to increase the use of improved seed and appropriate fertilizers. The PAT will interact with each agency on a site specific and functional basis, i.e., Extension Service for mass farmer educational programs, CRI and Crop Services Department on seed and fertilizer recommendations, CRI and universities on breeder seed production, etc.

It is important to recognize that under the privatized system, agricultural input retailers will ultimately be the primary source of information on improved seed and fertilizer use technology. The Agricultural Extension Service has an extensive network and will continue to play a key role in information transfer, not unlike their current role. In fact, the role of the Extension Service will be expanded to assist in the education of retailers in fertilizer and seed use. In order to strengthen their advisory

capacity, a major effort will be devoted to assuring that extension staff are properly trained in improved seed technology and fertilizer use practices.

3. Universities and Institutes of Management and Public Administration

The Project Advisory Team will liaise with Ghanaian educational institutions to improve or incorporate curriculum on seed and fertilizer technology and marketing. Resource staff from these institutions will be contracted for special consultancies and training courses as required in the privatization program.

4. Private Companies

Pioneer Tobacco Company, Pineapple Producers, Farmer-Owned Association, Agricultural Chemical Companies, etc. The PAT will interact with private companies to encourage the use of improved seed and appropriate fertilizer.

5. International Seed and Fertilizer Companies

Seed companies include Dekalb, AgriPro, CDC, and Pioneer. The fertilizer companies include Norsk Hydro and Kemira. Interaction with these organizations will be on an ongoing basis for technology on production, packaging, equipment, shipment, supply, pricing, and use.

6. Financial Institutions

The PAT will interact with organizations that make funds available for agricultural inputs and crop production. A source of working capital is essential for the successful operation of a developing private seed and fertilizer sector. The PAT will encourage programs for sound agricultural credit.

7. Transportation Firms

Close ties will be maintained with the transportation networks in Ghana, including Ghana Railway, Ghana Transport Company, Volta Lake Transportation System, and private trucking companies. The availability and cost of transporting seed and fertilizers throughout Ghana will be monitored.

8. USAID

A close tie with USAID will be maintained for financing, project appraisal, and complementary benefits with other AID-sponsored projects. The agriculture officer will be continuously updated on the progress of the project.

9. SFIU

The PAT will design the framework for an SFIU and work with the GOG and donor community to secure its funding.

E. Description of Action for Seed Industry Development

The Ghana seed industry is at a threshold to improve agricultural production through the ongoing restructuring of both the public and private aspects of the seed subsector. The

subsistence farmer needs to be educated on the value of using improved seed and fertilizers to increase production and profit.

Seed development activities will involve both the public and private sectors. The roles for the public seed sector have been listed in Table VII-1. In the SFPP, the specific organizations involved will be as follows:

<u>Organization</u>	<u>Main Function</u>
NSS	Coordinate all seed programs
NSC	Formulate policy and revise legislation
GSIU	Ensure quality control
CRI	Supply breeder seed
GLDB	Supply foundation seed

Supporting the private seed sector will, in time, create a profitable climate for the private seed producer/marketer to flourish and grow.

1. Seed Supply Options

The GOG is committed to developing its own seed industry including breeder, foundation, and certified seed; quality control and all aspects of marketing are integral components of the GOG's plans. Most of these activities will be developed in the private sector, however, as explained in Table VII-1, the GOG will have a continuous role to play, especially in policy issues and breeder seed development and quality standards.

The reason for developing Ghana's own seed industry, as expressed by the Government staff, is to provide national security for improved crop variety seed. In the advent of a drought year or political instability in the region, Ghana would have control of a supply of locally produced improved seed developed by its own CRI. Decreased crop yields associated with low-yielding varieties would be avoided. An example would be for this year, where ₵50 million worth of seeds was distributed to farmers in the upper regions by the MOA because of poor rains last season which led to poor harvests. Some farmers were forced to consume seeds normally reserved for planting. Another reason the GOG wants to see Ghana's seed industry expand is to maximize local land and labor resources. Rural employment would be created because seed growers are committed to producing high-quality foundation and certified seed. Infrastructure to support seed production, especially in farm management, seed cleaning, and distribution will be required in increasing amounts throughout the country. This will translate into additional rural employment as farm income is spent locally.

The size of the improved seed market in Ghana is unknown. In 1988, only 150 tons of improved maize seed was sold. The study team estimates that by the end of the privatization project, the amount of maize seed sold, in conjunction with increased fertilizer usage, could amount to 1,500 tons annually. There will also be a sizable demand for seed of other crops, especially rice. In 1991, certified maize seed was selling for approximately ₵333,400/ton. At this price (₵15,000/45-kg bag), a viable maize seed industry is a strong possibility.

The potential of the maize seed market could attract the interest of an international seed company to sell improved seed to Ghana's farmers, be it open-pollinated or hybrids. The supply could be by imports or by contracting local seed growers for production. A venture of this magnitude would take a commitment of time, trained personnel, and capital investments to develop first the maize market, then the other profitable crops.

For crop seed required for immediate or emergency conditions, it may be necessary for a local seed company(s) to import seed from a neighboring country or from countries having similar environmental conditions. This would depend on the quantity of crop seed needed meeting Ghana's quality control standards. Seeds for selected vegetable crops are being imported at present.

Ghana's seed market is rebounding slowly after the GSC venture. The small market, as it exists today, encourages the development of local seed companies to start selling seed at competitive prices. Until such time that a market is developed large enough to support a viable commercial operation, be it a local or an international seed company, the formation of the seed growers' association as a production unit is an important step to supplying Ghana's seed needs.

The emphasis of this project is to accelerate the development of a private seed industry in Ghana. The roles of the public and private sector in the seed industries are outlined below.

2. The Public Seed Sector

a. Crops Research Institute (CRI)

The CRI has clear objectives for their research activities. CRI is supported in Kumasi by the CIDA project, which is in its third 5-year program (1991-95). In Nyankpala, the CRI is assisted with its projects by the GTZ and IRAT. Recently, the World Bank made a commitment to also assist the research programs. The SFPP's involvement will be the coordination of breeder seed production for the new improved varieties.

(i) Breeder Seed Production

Nyankpala Experimental Station—The crops developed at this Northern Region research station are rice, millet, sorghum, and groundnuts. There is a minor emphasis on maize and cowpeas. The current effort on BSP is minimal. APPP funds have been provided for vehicles, seed lab equipment, field-plot supplies, and agrochemicals. All activities for BSP would be coordinated through the CRI and with the GTZ and IRAT.

The SFPP will focus on training in breeder seed production and developing a specialized facility for the processing and storage of breeder seed. Equipment required to establish this unit would be scheduled for 1993 at a cost of \$29,500 as shown in Table VIII-3.

Table VIII-3. Estimated Investment Cost for Developing a Breeder Seed Storage and Processing Facility^a

Item:	Cost (US \$)
Maize sheller	3,500
Sorghum and cowpea harvester/sheller	12,000
Air/screen seed cleaner with screens	12,500
Bag sewer and supplies	1,500
Total	\$29,500

a. Assuming existing building is available.

Source: IFDC study team.

Fumesua Experimental Station—The research programs are for maize, cowpeas, and soybeans. The BSP program is led by a well-trained seed technologist. A facility specifically designed for BSP, with both drying and storage rooms, is almost operational. APPP funds have been allocated for vehicles, seed lab equipment, field-plot supplies, agrochemicals, and a scalper-type seed cleaner. With this support, in combination with equipment programmed by the CIDA project, this facility would have the capability to process BS adequately.

Because of the central location in Kumasi and the need to establish a specialized Foundation Seed cleaning plant, the SFPP will expand this BS facility to include a Foundation Seed Project, as described below.

(ii) Foundation Seed Production

The PAT will focus on the existing breeder seed facility at Fumesua and developing it into the specialized function of a foundation seed project. The present facility would be upgraded to create a modern seed cleaning and processing plant. This plant would have additional drying and storage areas and also include a seed lab. Seed growers would be selected, developed, and trained, as required, by the FSP staff, the GLDB, and the GSIU. They would be an elite group of growers registered to produce the high-quality foundation seed. An example is Ejura Farms producing foundation seed for maize under irrigation in the off season. The seed processing would be a service to the private seed growers on a fee basis.

Foundation seed is the link between breeder seed and certified seed. Until such time that a private seed company would have the ability to process foundation seed, it should be managed by a foundation seed project, as described. The coordination required to monitor and produce the highest quality seed needs a special place in the seed chain. It is important to have a link with the CRI plant breeders and the foundation seed producers. The foundation seed project cleaning plant would be constructed with future plans to include not just cereal crops but any specialized seed crop. This project would be coordinated through the CIDA project.

The building expansion and equipment installation required to enlarge this unit is scheduled for 1993 at a cost of \$112,800 (Table VIII-4).

Table VIII-4. Estimated Investment Cost for Upgrading the Foundation Seed Production Facility

	Cost (US \$)
Items:	
Indent disc cleaner	7,600
Cylinder cleaner	9,700
Gravity table	8,800
Seed treater	6,500
Scale	2,500
Bagger/sewing unit	4,200
Elevators (3)	7,500
Conveyors (3)	6,000
Corn husker - tractor mounted	10,500
Precision planter	9,500
Grain dryer	23,000
Cold storage	17,000
Total	\$112,800

Source: IFDC study team.

b. Grains and Legume Development Board

The GLDB is currently producing foundation seed for the improved/certified and commercial seed market. Their support comes through the GGDP and they are designated to conduct on-farm trials and demonstrations to promote the new improved varieties from CRI. They also have two farms used exclusively for FSP. In the proposed CSD/Seed Industry Project, they were programmed to be the sole producer of foundation seed for maize, cowpeas, sorghum, millet, and groundnuts. Presently, they are the best equipped organization to produce foundation seed with their experience, and APPP funds have been provided for vehicles, quality control equipment, farm equipment, processing equipment, and cold room equipment.

The proposed program for the GLDB in the SFPP would be to phase them out of foundation seed production over a 3-year period, between 1991 and 1993. During this period, the GLDB would work with the GSIU and the Foundation Seed Project to identify and train the best private seed growers in foundation seed production.

c. National Seed Service

The role of the NSS is to provide linkages and coordination between all seed groups. It will monitor all seed activities, conduct surveys, make projections on seed usage, and assist in all aspects of marketing. The NSS will be the secretariat for the NSC and would set the dates and prepare the agenda for those meetings. They would also assist with the development of the Seed Growers' Association (SGA).

The NSS is still in the planning stages. APPP funds have been designated to start the NSS by providing vehicles, office equipment, operation, and office renovation. As planned the NSS would be guided in Accra by a Director and Administrative Assistant. Regional activities would be under the Crop Service Officer.

An interim plan to provide immediate action to support the seed restructuring program would be to assign the role of the NSS to the GLDB. The GLDB has firsthand experience in all areas of seed production and would be a vital asset to the development of the NSS. They have established relationships with farmers and seed growers and would be instrumental in contributing to this new seed program. As mentioned, they have received vehicles and equipment through the APPP. The GLDB is already in place in all the regions.

The GLDB could manage the GSC facilities at Winneba and Tamale. These seed cleaning plants are too large to dismantle and sell as component parts. They would use them to process foundation seed until such time that these plants are sold and the foundation seed operation is completed. This would complement the GLDB's current processing

operation in Kumasi by providing a seed cleaning service in the Northern and Southern regions.

This would resolve the issue of how to dispose of the GSC facilities until a local private seed company is developed or a multinational seed company would purchase the complexes.

The PAT will support the NSS mainly through training. The NSS has the key role to integrate all seed programs and they should be familiar with all aspects of the seed industry development. Training would include: production, certification, extension, business management, marketing, and equipment operation.

d. Ghana Seed Inspection Unit

This unit has a clearly defined quality control role in the seed industry. It focuses on consumer protection, ensuring that seed sold as certified or foundation indeed conforms to the national standards for varietal and mechanical purity and germination. The GSIU is headquartered in Pokoase as a unit under the PPRS/CSD. Regional staffing will initially be at four locations: Ho, Winneba, Kumasi, and Tamale. APPP support was a major factor in getting this unit started, providing \$860,000 for the construction of the National Seed Laboratory, vehicles, houses, equipment, supplies, and training.

This unit was implemented in the aftermath of the quality control problems experienced by the GSC. Seed quality control is a state-supported organization for seed certification and testing. The GSIU also has the responsibility of registering seed growers and inspecting their fields for certified seed production. This unit works closely with private seed producers, both companies and growers, to see that a quality product reaches the market.

In the SFPP, the continued support to the GSIU will be in the area of additional training in seed certification, seed testing, and additional seed testing equipment. Also training would be provided to the seed labs at the CRI research stations at Fumesua and Nyankpala. These two seed labs would be located in the breeder and foundation seed complexes.

e. National Seed Committee

The National Seed Committee (NSC) was established under the 1972 Seeds Decree. It has been dormant for years and only recently has been activated. This committee serves to enforce seed policy by reviewing existing seed laws, developing certification standards, and in general, keeping abreast of all seed activities through the NSS.

The committee should have two meetings per year, with additional meetings scheduled at the discretion of the NSS. Presently what is missing from the NSC is represen-

tation from the private sector. The committee, as it exists today with members from the MOA, recognizes the importance of private-sector participation, but is undecided as to who and how many representatives should be allowed.

It would seem that if privatization is the focus of the restructuring effort and the MOA is serious about supporting this then there should be equal representation between the public and private seed sector. The SGA, as the only private seed organization at this time, should nominate seed growers and seed retailers to this committee.

As a training and educational experience in seed industry develops, selected members of the NSC would participate in a study tour to a developed country and an undeveloped country to see how the private and public seed sectors work together.

3. The Private Seed Sector

a. Seed Growers' Association

The main emphasis of the PAT would be to develop, organize, and assist with the orderly development of the SGA and encourage development of private seed companies that generate a profit. This would be accomplished by sponsoring regional seed growers' workshops to describe how successful seed associations work, how funds are generated for self-support, and for promotion. The next step would be to conduct a national SGA workshop with regional representation to define long-range goals, to select an executive committee, and form subcommittees in specific areas of interest. The outcome of the national SGA workshop would be the appointment of the NSC members. The NSS would monitor these activities.

Annually there would be regional and national workshops, executive committee meetings, and periodic events to promote the SGA marketing effort. An example agenda could be:

- (i) GSIU status report
- (ii) NSS status report
- (iii) CRI plant breeders' update report
- (iv) Growers' forum on specific issues
- (v) Treasurer's report
- (vi) Future strategies for production and marketing

For a successful transition to privatization, the seed industry needs to be approached as a business. As these individual seed growers form associations, they will need extensive training in:

- (i) Business management
- (ii) Marketing
- (iii) Seed company operations

As the SGA members progress, an effort will be made to promote the formation of seed centers. The seed centers would serve as technology demonstration and training centers. These centers would be developed on a small scale and located in regional areas, near production and markets. They essentially may become working prototypes of a seed company operation. Initially, they would concentrate on maize but could be expanded to other crops as necessary. One project for the centers could be to introduce, on a pilot program basis, vegetable seed production in the northern regions.

Location and management of the seed centers would be in conjunction with the local SGA. The privatization project would provide equipment, initial supplies, and training. There would need to be a commitment from the SGA to manage these centers efficiently. The SGA would provide the shelter, construction of platforms, electricity, and security. The service the seed centers perform would be to demonstrate the potential of producing a quality crop that has been harvested, shelled, bagged, and sealed properly with certified tags. The labor saving would provide seed growers the opportunity to expand their farm operations to other profitable production.

The equipment needed to start a seed center is estimated at \$13,000 as shown in Table VIII-5.

Table VIII-5. Estimated Cost for Establishing a Seed Technology Center

	Cost (US \$)
Item:	
Maize sheller—mobile	4,000
Air/screen seed cleaner	7,000
Bag sewing machine and supplies	<u>2,000</u>
Total	13,000

The plan would be to establish three centers in the first year, three in the second, and two in the third. The regional SGAs would retain the title to this equipment for their continued use or if it was agreed to, this equipment could be sold to an up and coming seed company. If sold, then the funds would be put into the association's treasury to use for the SGA's promotional activities.

The funding for building costs and operation of the seed centers will be determined and worked out on an individual basis (e.g., a surcharge per 45-kg bag of seed produced).

b. Seed Retailers

Ideally, the specific task of selling seed would be through multipurpose retailers. They would sell seed, fertilizer, chemicals, and other farm supplies. Increased demand for certified seed will be generated by media promotion, on-farm demonstrations, and the extension services.

c. Private Seed Companies

The ultimate goal of the restructuring effort is to create seed companies that operate successfully and profitably. Few seed companies, if any, are in the farming business, as the GSC and the GLDB, because farm management operations are quite different from operating a seed company. Some companies do maintain research stations that produce pre-breeder seed. Most companies contract out all stages of seed production to private seed growers. One of the purposes of the SGA is to prepare the seed growers for future contract seed production.

Marketing campaigns are expensive and seed companies want exclusive rights to new varieties before they invest their own money for promotion. These are for varieties that are produced through their own research program, purchased from other companies, or through an arrangement with a public institution, such as on a royalty percentage for every kilogram of seed sold. Seed companies could also receive germplasm and donate money or equipment to the institute. The decision is generally left to the plant breeders since they know the potential of the material or varieties better than anyone else.

Private seed companies are aggressive and will search out potential markets to maximize their resources. For example, in Ghana, yellow maize for poultry feed or sorghum for beer could be lucrative markets. They would contract for production with private seed growers for these crops and market them to the local business. Opportunities yet to be explored also exist in international markets.

The PAT involvement with the potential investors would be to assist seed companies, both local and international, in their evaluation of seed production opportunities in Ghana.

F. Credit Required for Privatization

1. Financing the Privatized Systems

The exit of government from the seed and fertilizer industry will mean that enterprises within the newly privatized system will be required to depend on their own or borrowed resources to sustain commercial activities. Success in the privatization effort will

depend on the effectiveness of the banking system and existing credit schemes in providing finance in four areas: (1) fertilizer importation, (2) fertilizer wholesaling and retailing, (3) seed production and marketing, and (4) crop production. The phasing in of the privatization process is expected to begin in 1992 and will coincide with the culmination of various reforms in the financial sector. Both national and rural banks have been restructured and the entire system recapitalized through the NPART program and the Rural Finance Project.

Given these major efforts by GOG and IBRD, the credit component of the privatization plan will emphasize effective use of the revitalized financial system. The credit program will concentrate on: (1) facilitating access to the banking system for private-sector enterprises in the seed and fertilizer industries; (2) establishing institutional linkages among seed and fertilizer industries, national and regional Ministries of Agriculture, agricultural projects, and financial institutions lending to agriculture; (3) monitoring credit availability and disbursement to the four areas in order to identify bottlenecks that might hinder the privatization effort; and (4) strengthening rural bank capacity to lend to fertilizer and seed enterprises by developing alternative approaches to collateralizing loans. In addition, the feasibility of a credit guarantee scheme during the privatization period will be assessed.

2. Credit Assistance

a. Facilitating Retailers' and Seed Producers' Access to Bank Finance

Government control of agricultural inputs has prevented the development of a commercial environment in the seed and fertilizer industry. Many entrants into the newly privatized market for agricultural inputs will not be familiar with the use of commercial credit for working capital. Conversely, many banks will not have financed commercial activities in this area and may be hesitant to take credit risks connected with these new lines of business. The credit-related goal in this situation is to bring lenders and borrowers together in a systematic manner.

The PAT will work with members of the newly created business associations for fertilizer retailers (Fertilizer Retailer Association of Ghana) and seed producers (Ghana Seed Growers Association) to define credit needs and identify potential lenders. One of the credit specialist's most important roles will be to identify entrepreneurs within the two business associations having potential for success and needing help in the following areas:

- (i) Identification of local lenders that are willing to finance commercial activities in the seed and fertilizer industries.

- (ii) Financial planning including cash flow projection, break-even analysis, and other financial analysis required by lenders. Assist in developing adequate record-keeping procedures.
- (iii) Loan application process.

Additionally, as private-sector importation is phased in, the PAT Credit Specialist will assist potential importers to develop a financial plan and liaise with banks where such involvement is useful including facilitating loan syndication for large amounts of finance.

The Credit Specialist will systematically liaise with those banks likely to provide finance for fertilizer retailers and seed producers or their associations (e.g., Association of Rural Banks, Ghana Bankers Association, etc.). Among his roles in this area will be to:

- (i) Explain the privatization process and the opportunities for the banking system.
- (ii) Develop lender profiles for fertilizer retailers.
- (iii) Introduce customers with potential for success as fertilizer retailers and seed producers.
- (iv) Identify problems banks have in lending to fertilizer retailers and seed producers and develop remedial actions.
- (v) Assist in development of credit records on potential retailers along the lines of the "Data Bank" proposal of the Ghana Bankers Association.

Additionally, the credit adviser will liaise with domestic programs created to finance small and medium enterprises undertaking commercial activities that were previously under government preview. Examples of such programs are the US \$30 million Fund for Small- and Medium-Scale Enterprises Development (FUSMED) and the Programme of Action to Mitigate the Social Cost of Adjustment (PAMSCAD) credit line (which finances small-scale enterprises initiated by retrenched government employees). Where capital required is substantial and has a significant foreign exchange component, external loan sources will be identified.

b. Establishing Institutional Linkages Related to Credit

The following committees will be established to promote a coordinated approach to credit-related policy and activities. The PAT will work with these committees in an advisory capacity.

(i) Agricultural Lender's Forum

This committee would be chaired by the Agricultural Development Bank and would include representatives of the following organizations: Rural Bank Department (Bank of Ghana), Association of Rural Banks, Credit Union Association, Ghana Commercial Bank,

and other banks that lend to agriculture. Among the areas they would review and/or help coordinate are:

- The privatization effort in fertilizer and seed production industries and any credit constraints that develop at any level of commercial activity or in any region.
- Periodic examination of data generated by the PAT monitoring of overall agricultural lending.
- Information sharing on loan recovery problems. Coordination towards establishment of a "Data Bank" on agricultural sector borrowers.
- Changes in BOG's credit policy connected to agriculture.
- Policy recommendations to the Ministry of Finance and/or Bank of Ghana, e.g., credit guarantee scheme for financing seed producers and fertilizer retailers.
- Specific approaches to problem lending areas, e.g., rural locations not accessed by banking system.

(ii) Rural Credit Committee

This committee would include representatives from those organizations having an extension or outreach role in rural areas. Members would include representatives from: extension departments of national and regional Ministries of Agriculture, Global 2000, important non-government organizations (NGOs) (e.g., Technoserve), extension departments of enclave projects (IFAD, UNDP/FAO, etc.), Seed Growers' Associations, Cooperatives, and important rural-based animator groups (e.g., 31st December Women's Movement). Among the areas they would review and/or help coordinate are:

- PAT's annual survey of lending to agriculture.
- Credit education component in existing extension programs.
- Credit deficient locations. Assessment of locational efficiency of various credit schemes.
- Progress in organizing viable farmer groups for agricultural loans.
- Status of farmer loan repayment and success in followup recovery programs.
- Feedback on availability of fertilizer and seed in their operating areas.
- Policy recommendations to government in the area of farm production credit.

c. Establish a Credit Monitoring Function

Since credit is critical to the privatization effort, the PAT credit specialist will assess credit availability and efficiency in key areas. The PAT will work with the SFIU, Regional Ministries of Agriculture, Agricultural Projects, Banks, and Seed and Fertilizer Associations to carry out, *inter alia*, the following:

- (i) A baseline survey of Rural Banks, their attitudes and practices. This baseline would update the 1988 Technoserve Credit Study. It would be supplemented by followup surveys on an annual basis during the privatization period.
- (ii) A baseline survey of farmer attitudes and practices with regard to credit schemes and relations with the formal financial sector. Assessment of farmer credit use *vis-à-vis* purchase of agricultural inputs.
- (iii) Monitoring of credit for retailers and seed producers in order to identify constraints that might hinder the privatization process.
- (iv) Monitoring of loan recovery rates countrywide. Isolation of programmatic differences in schemes that contribute to better performance.
- (v) Monitoring of Bank of Ghana policy and other macroeconomic factors that might impact credit availability.

d. Field Warehousing Pilot Program

Rural Banks and rural branches of various investment and commercial banks have expressed a conditional willingness to lend to fertilizer retailers. The major technical problem constraining such loans is collateral. Land and structures outside urban or developed areas are generally not considered suitable collateral by banks. Land is freehold, and rural structures often have limited value either because of the quality of their construction or because they are not easily transferable given rural isolation or family joint ownership.

The field warehousing concept, applied to fertilizer retailing, would be based on bankers being able to hold, in secured warehouses, some portion of the fertilizer inventory that retailers have purchased on loan. Initially some part of the fertilizer would be released to the retailers to meet initial seasonal demand. Subsequently as cash is received from sales to farmers the retailer would draw down from his bank-controlled stock by making agreed-upon payments against principal and interest. Fertilizer once sold provides the cash means to draw down more stock, and the process would be repeated until the fertilizer inventory is depleted.

Field warehousing is presently limited in two ways. First, most banks own very little warehousing that could be used for such purposes, and second, the bulk of fertilizer consumption takes place in Northern and Upper West and East Regions where the banking network is extremely limited. A pilot warehousing project would be limited to this area and would focus on developing a field warehousing scheme using underutilized government warehousing (MOA, FASCOM, GFDC, etc.).

The project would select warehouses on the basis of the following criteria: (a) level of fertilizer consumption; (b) geographic coverage of the marketing area; (c) proximity to

existing banks or bank branches in the region; and (d) warehouse rehabilitative potential. In those areas not covered by branch banks or Rural Banks, the control of field warehouses would be by bank Agricultural Project Officers that have responsibility for those districts. The project capital cost will come from modifying and rehabilitating warehouses. A limited number of warehouses is envisioned and rehabilitation costs per warehouse will be restricted. The useful life of this scheme will depend on the private-sector retailing network that develops and the bank's willingness to purchase or lease long-term warehousing.

G. Training

Proper training is paramount to effective performance by the Ghanaian fertilizer and seed industry workforce. Much of the workforce has the basic education foundation needed to help Ghana move forward but few possess the highly specialized managerial skills needed for developing a sustainable commercial seed and fertilizer business.

The focus of the training effort will be to (1) identify appropriate people to participate in need-based training, (2) assist in the training of those people, and (3) assist with their placement in positions that properly utilize their skills and knowledge.

The training will involve a varied approach including (1) short-term in-country training programs and workshops, (2) short-term training programs overseas, and (3) short-courses (e.g., up to 90 days) in the United States. Individuals selected to participate in the programs will include civil servants (e.g., Extension Officers, SFIU Staff, Breeder Seed Specialists, etc.) and private-sector business people. In addition, appropriate Government and private-sector officials will participate in study tours to selected countries on (1) seed industry development, (2) policy issues, and (3) credit.

A description of the training programs planned is presented as Table VIII-6. During year 1 (1992), the principal focus will be on training (1) agro-inputs retailers, (2) soil scientists involved in developing fertilizer recommendations, (3) seed producers, (4) agricultural extension officers, and (5) bank executives.

The agro-inputs retailer forms the critical link between the supplier and farmers. In addition to ensuring that farmers have an adequate supply of appropriate fertilizer at a reasonable price, he/she is viewed as the most valuable human resource that can be used to promote more efficient agricultural practices including the use of improved seeds and increased fertilizer use. Effective retailers must be able to handle the day-to-day business operations (e.g., basic bookkeeping, inventory control, etc.) required for a commercially sustainable agricultural inputs business. In addition, they must be service oriented, meaning that they must be knowledgeable on the proper use of agricultural inputs. The current fallacy that all farmer advisory activities are the responsibility of the extension officers must be replaced by the idea that a key responsibility of the retailer is to transfer appropriate

Table VIII-6. Training Program Description

1. Program Title:	Agro-Inputs Retailer Training
Objective:	To enhance retailer knowledge on seed and fertilizer business management
Description:	A basic program with course content to include (a) seed and fertilizer product knowledge, (b) crop specific nutrient needs and deficiency symptoms, (c) fertilizer and seed inventory management, (d) basic bookkeeping, (e) salesmanship, (f) conducting farmer educational meetings, (g) pricing, etc.
Number of Participants:	Maximum of 25 per program
Training Site:	Local – region specific
Frequency:	Annual for selected regions, beginning in 1992
Duration:	3 days
2. Program Title:	Fertilizer Marketing Training Programs – In-Country
Objective:	To increase the participants' knowledge and skills in planning, implementing, and controlling fertilizer marketing programs
Description:	Program content to include fertilizer marketing management, demand forecasting, pricing for profit, fertilizer promotion, the fundamentals of plant nutrition, the wholesaling and retailing function, etc.
Number of Participants:	Maximum of 20 per program
Training Site:	Local
Frequency:	Annual, beginning in 1992
Duration:	2 weeks

Table VIII-6. Training Program Description (Continued)

3. Program Title:	Bank Executives Training Program
Objective:	To increase the participants' knowledge in agricultural lending practices and to provide insight to the credit-related needs of agro-inputs retailers, wholesalers, etc.
Description:	Program will focus on an introduction to the role of fertilizers in agriculture, familiarization with approaches to financing agricultural inputs, financing of fertilizer imports, financial analysis techniques, etc.
Number of Participants:	15
Training Site:	International - U.S.
Frequency:	1992 only
Duration:	2 weeks
4. Program Title:	Fertilizer Marketing Management Training Program
Objective:	To increase the participants' knowledge in fertilizer marketing
Description:	A comprehensive program with course content to include fertilizer supply options, international procurement, retailer selection, managing a marketing program, fertilizer distribution, pricing, etc.
Number of Participants:	2
Training Site:	U.S.
Frequency:	Annual, beginning in 1992
Duration:	5 weeks

Table VIII-6. Training Program Description (Continued)

5. Program Title:	Development of Effective Fertilizer Recommendations
Objective:	To improve the participants' knowledge of statistical analysis techniques and experimental data interpretation, and to improve their skills in making practical fertilizer recommendations for farmers
Description:	Program to include statistical and economic analysis of fertilizer use data, the use of regression analysis techniques in fertilizer evaluation, and the use of desktop computers in data analysis
Number of Participants:	3
Training Site:	International (Lomé, Togo)
Frequency:	Annually, 1992 and 1993 only
Duration:	3 weeks
6. Program Title:	Training Program on Credit for Agro-Inputs Retailers
Objective:	To increase participants' understanding of the use of commercial credit in their business operations
Description:	Content to include credit sources, determining credit needs, the cost of credit, completing a loan application, credit problems, etc.
Number of Participants:	Maximum of 20
Training:	Local
Frequency:	Annual session in selected regions, beginning in 1992
Duration:	1 day

Table VIII-6. Training Program Description (Continued)

7. Program Title:	Training in Seed Technology
Objective:	To increase participants' knowledge in the production and marketing of breeder, foundation, and certified seed
Description:	Content to include breeder seed development, the production of foundation seed, producing and processing of certified seed, laboratory techniques, quality control, etc.
Number of Participants:	2
Training Site:	International
Frequency:	Annual in 1992, 1993, and 1994
Duration:	3 months
8. Program Title:	Training Program on Seed Certification
Objective:	To increase the participants' knowledge in the production, quality control, and marketing of certified seed
Description:	Course content to include the economics of using certified seed, certified seed production technology, quality control, certification procedures, seed marketing, etc.
Number of Participants:	Maximum of 12
Frequency:	One program each in 1992 and 1993; followup programs to be determined based upon need
Duration:	1 week
9. Program Title:	Seed Certification Workshop
Objective:	To improve participants' knowledge in the seed certification process
Description:	Course content to include production of certified seed, quality control, seed marketing, etc. Program to include field visits to commercial producers of certified seed
Number of Participants:	Maximum of 15
Training Site:	Local
Frequency:	Annual, beginning in 1993
Duration:	2 days

Table VIII-6. Training Program Description (Continued)

10. Program Title:	Training Program for Agricultural Extension Officers
Objective:	To improve the participants' knowledge of soil-fertilizer-crop relationships, proper fertilization practices, the importance of using certified seed, etc.
Description:	Program content to include fertilizer product knowledge, proper fertilization techniques, the economics of fertilizer use, basics in seed technology, identifying crop nutrient deficiencies, crop marketing basics, etc.
Number of Participants:	40 (basic); 50 (refresher)
Training Site:	Local – key regions
Frequency:	Basic course to be held annually for the years 1992, 1993, and 1994; refresher course to be held annually beginning in 1993, for those who have completed the basic course
Duration:	Basic course for 3 days; refresher course for 1 day
11. Program Title:	Data Collection and Analysis Training Program
Objective:	To improve the participants' knowledge of data collection, storage, retrieval, and analysis techniques
Description:	Program content to include fertilizer and seed terminology, information sources, survey techniques, questionnaire design, interviewing, data tabulation, statistical analysis techniques, etc.
Number of Participants:	3 – to be selected from SFIU staff
Training Site:	International
Frequency:	Annual in 1993 and 1994
Duration:	3 weeks

Table VIII-6. Training Program Description (Continued)

12. Program Title:	Training Program in International Fertilizer Procurement
Objective:	To improve the participants' knowledge of buying fertilizers on the international market
Description:	Program content to include a comprehensive study of fertilizer procurement on the international market including an appraisal of current market conditions, a review of procurement techniques, product specification guidelines, bid evaluation, documentation requirements, writing a contract, etc.
Number of Participants:	2
Training Site:	International (Europe and Asia)
Frequency:	Participants to attend in 1994
Duration:	3 weeks
13. Program Title:	Agrobusiness Management Short Course
Objective:	To improve the participants' knowledge of modern business practices
Description:	Short course to focus on providing the participants exposure to modern business concepts including a study of financial analysis techniques, marketing management, personnel development, accounting for business managers, etc.
Number of Participants:	2
Training Site:	International – U.S. university system
Frequency:	Participants to attend in 1994 and 1995
Duration:	3 months

Table VIII-6. Training Program Description (Continued)

14. Program Title:	Effective Promotion of Agricultural Inputs
Objective:	To improve the participants' knowledge of promotion activities that are commonly used in developing countries to promote more efficient use of agricultural inputs
Description:	Program to focus on (a) the role of promotion in increasing sales; (b) effective advertising, e.g., point of purchase displays, leaflets, demonstrations, etc.; (c) type promotional programs that can be used
Number of Participants:	25
Training Site:	Local
Frequency:	1995 only
Duration:	3 days

technology. The extension officer and the retailer should be allies, both directed to promoting improved agricultural practices.

An estimated 650 people have completed registration formalities to be fertilizer retailers. To increase their capability as full-service agro-inputs retailers, a major effort will be made to provide them with basic training in fertilizer and seed retail management. In order to assist with retailer development, four 3-day courses in retailer training will be conducted during year 1 of the program. In addition, five 1-day sessions will be directed to improving retailers' understanding of credit as it relates to the agro-inputs business. Selected retailers, based upon potential and performance, will be exposed to more in-depth training in international marketing programs.

It is important to reevaluate the fertilizer recommendations now in place in Ghana and to focus on modifying those on the basis of commercial prudence for each specific crop and agroecological area. A key first step is to ensure that the people responsible for developing the recommendations are properly trained. Selected soil scientists will participate in a 3-week training program in Lomé, Togo, on developing effective fertilizer recommendations.

Improved crop varieties are essential for increased agricultural production. In order to develop the human resource base needed for the breeder seed and foundation seed programs, selected individuals will be identified to participate in a seed technology short course in the United States. In addition, certified seed producers will participate in an in-country training program on producing certified seed and the seed certification process.

The agricultural extension service provides the most extensive agricultural advisory network in Ghana. The privatization program will include a strengthening of the technical expertise of the extension staff to facilitate technology transfer efforts. A major effort will be devoted to ensuring that all extension officers are properly trained in fertilizer and seed use practices. Four 3-day in-country training programs are to be conducted for extension officers during 1992.

The success of private-sector involvement in agrobusiness will be, to a large extent, dependent upon credit availability. To strengthen the capability of the banking community, a training program will be designed to introduce selected banking executives to financial requirements of agrobusiness companies and lending practices commonly used by banks dealing with agrobusinesses. The program will be for 2 weeks in the United States.

The overall focus of the training effort started in year 1 of the project and will continue for the 3 remaining years. In addition to a continuation of basic courses, refresher-type courses will be offered for fertilizer retailers, agricultural extension officers, and certified seed producers. In addition, new programs will be offered to meet the changing needs of the fertilizer and seed sectors. For example, in order to support the

Government's role in monitoring the seed and fertilizer sectors, SFTU staff will be trained in 1993. During 1994, a specialized program will be offered in fertilizer procurement to better enable the private sector to assume fertilizer import duties. For the most part, the local training programs will be conducted by members of the PAT with inputs as needed from local experts including university staff. A preliminary training schedule is presented as Table VIII-7.

Excluding the planned study tours (three for up to 2 weeks each), for the period 1992-95, a total of 930 workdays of training is scheduled. The total number of participants to receive basic and refresher-type training is 2,561.

H. Staffing

The transition from a government-controlled and administered seed and fertilizer marketing system to one in which seed production and seed and fertilizer procurement and marketing activities are in the hands of the private sector will be a major undertaking. As indicated previously, a comprehensive, fully integrated approach is called for in keeping with the project goal of developing a competitive and efficient marketing system for seed and fertilizers. The major areas of focus will be in (a) policy reform, (b) human resource development, (c) design of an efficient input marketing system, (d) development of institutions and improved institutional linkages, (e) strengthening the credit system, and (f) development of quality control programs. Experience in other countries substantiates that sustainable progress is best achieved when the technical advisors are physically stationed in the target country and carry out their activities in conjunction with national counterparts.⁶ The plan outlined herein can only be assumed to be a guideline for development of the seed and fertilizer industries. However, as private business people recognize, plans often require on-the-spot decisionmaking to incorporate necessary modifications to assure progress toward the overall objective. Hence, the best chance of success in a project of this nature is achieved when the consultant advisors are stationed in the target country and working in collaboration with national counterparts.

6. Since its inception in 1974, IFDC has been involved in technical assistance missions related to fertilizer-sector development in countries throughout the world. The Bangladesh project, funded by USAID and beginning in 1979, is a prime example of the long-term success achieved by a core group of resident consultants working in unison with national specialists.

Table VIII-7. Training Schedule—Seed and Fertilizer Personnel

Year	Program Title	Target Audience	Program Duration	Number of Participants	Location
1992	1. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Upper Region
	2. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Northern Region
	3. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Volta Region
	4. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Ashanti Region
	5. Agro-Inputs Marketing Training Program	Agro-Inputs Retailers	10 days	20 per program	Local—Accra
	6. Fertilizer Marketing Training Program	Agro-Inputs Retailers	14 days	5	International—Kenya
	7. Fertilizer Marketing Management Training Program	Agro-Inputs Retailers	35 days	2	International—U.S.
	8. Development of Effective Fertilizer Recommendations	Soil Scientists/Crop Agronomist	21 days	3	International—Togo
	9. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Northern Region
	10. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Volta Region
	11. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Ashanti Region
	12. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Accra
	13. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Upper Region
	14. Seed Technology Short Course	Seed Producers	90 days	2	International—U.S.
	15. Seed Certification Training Program	Seed Producers	5 days	12	Local—Accra
	16. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Basic)	Extension Officers	3 days	40	Local—Northern Region
	17. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Basic)	Extension Officers	3 days	40	Local—Ashanti Region
	18. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Basic)	Extension Officers	3 days	40	Local—Accra
	19. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Basic)	Extension Officers	3 days	40	Local—Upper Region
	20. Training Program for Bank Executives	Bank Executives	14 days	15	International—U.S.
	Subtotal		218 days	419	

(Continued)

Table VIII-7. Training Schedule—Seed and Fertilizer Personnel (Continued)

Year	Program Title	Target Audience	Program Duration	Number of Participants	Location
1993	1. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Upper Region
	2. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Northern Region
	3. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Volta Region
	4. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Ashanti Region
	5. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Accra Region
	6. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	25 per program	Local—Upper Region
	7. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	25 per program	Local—Northern Region
	8. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	25 per program	Local—Volta Region
	9. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	25 per program	Local—Ashanti Region
	10. Agro-Inputs Marketing Training Program	Agro-Inputs Retailers	10 days	20 per program	Local—Accra Region
	11. Agro-Inputs Marketing Training Program	Agro-Inputs Dealers	14 days	5	International—Indonesia
	12. Fertilizer Marketing Management Training Program	Agro-Inputs Retailers	35 days	2	International—U.S.
	13. Development of Effective Fertilizer Recommendations	Soil Scientists/Crop Agronomist	21 days	3	International—Togo
	14. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Upper Region
	15. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Volta Region
	16. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Ashanti Region
	17. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Accra Region
	18. Seed Technology Short Course	Seed Producers	90 days	2	International—U.S.
	19. Seed Certification Training Program	Seed Producers	5 days	12	Local—Accra Region
	20. Seed Certification Workshop	Seed Producers	2 days	20	Local—Accra Region
	21. Data Collection and Analysis Training Program	SFIU Staff	21 days	3	International—U.S.
	22. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Basic)	Extension Officers	3 days	40	Local—Northern Region
	23. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Basic)	Extension Officers	3 days	40	Local—Ashanti Region
	24. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Basic)	Extension Officers	3 days	40	Local—Accra
	25. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Basic)	Extension Officers	3 days	40	Local—Upper Region
2	(refresh)	Extension Officers	1 day	50	Local—Northern Region
2	(refresh)	Extension Officers	1 day	50	Local—Ashanti Region

Table VIII-7. Training Schedule—Seed and Fertilizer Personnel (Continued)

Year	Program Title	Target Audience	Program Duration	Number of Participants	Location
1993 (Cont.)	28. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Refresh)	Extension Officers	1 day	50	Local—Upper Region
	29. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Refresh)	Extension Officers	1 day	50	Local—Accra
	Subtotal		229 days	732	
1994	1. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Upper Region
	2. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Northern Region
	3. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Volta Region
	4. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Ashanti Region
	5. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Accra Region
	6. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	40 per program	Local—Upper Region
	7. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	40 per program	Local—Northern Region
	8. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	40 per program	Local—Volta Region
	9. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	40 per program	Local—Ashanti Region
	10. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	40 per program	Local—Accra Region
	11. Agro-Inputs Marketing Training Program	Agro-Inputs Retailers	10 days	20 per program	Local—Accra Region
	12. Agro-Inputs Marketing Training Program	Agro-Inputs Retailers	10 days	20 per program	Local—Northern Region
	13. Agro-Inputs Marketing Training Program	Agro-Inputs Dealers	14 days	5	International—Indonesia
	14. Fertilizer Marketing Management Training Program	Agro-Inputs Retailers	35 days	2	International—U.S.
	15. Fertilizer Procurement on the International Market	Fertilizer Importers	15 days	2	International—U.S.-Europe-Asia
	16. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Northern Region
	17. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Volta Region
	18. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Ashanti Region
	19. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Accra Region
	20. Credit for Agro-Inputs Retailers Training Program	Agro-Inputs Retailers	1 day	20	Local—Upper Region
	21. Seed Technology Short Course	Seed Producers	90 days	2	International—U.S.
	22. Seed Certification Workshop	Seed Producers	2 days	20	Local—Accra Region
	23. Data Collection and Analysis Training Program	SFIU Staff	21 days	1	International—U.S.
	24. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Basic)	Extension Officers	3 days	40	Local—Northern Region
	25. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Basic)	Extension Officers	3 days	40	Local—Ashanti Region
	26. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Refresh)	Extension Officers	1 day	50	Local—Northern Region

Table VIII-7. Training Schedule—Seed and Fertilizer Personnel (Continued)

Year	Program Title	Target Audience	Program Duration	Number of Participants	Location
1994 (Cont.)	27. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Refresh)	Extension Officers	1 day	50	Local—Ashanti Region
	28. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Refresh)	Extension Officers	1 day	50	Local—Accra
	29. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Refresh)	Extension Officers	1 day	50	Local—Upper Region
	30. Agro-Business Management Training Program	Company Officers	<u>90 days</u>	<u>3</u>	International—U.S.
	Subtotal		320 days	780	
1995	1. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Northern Region
	2. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Ashanti Region
	3. Agro-Inputs Retailer Training (Basic)	Agro-Inputs Retailers	3 days	25 per program	Local—Accra Region
	4. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	50 per program	Local—Northern Region
	5. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	50 per program	Local—Ashanti Region
	6. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	50 per program	Local—Upper Region
	7. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	50 per program	Local—Northern Region
	8. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	50 per program	Local—Volta Region
	9. Agro-Inputs Retailer Training (Refresh)	Agro-Inputs Retailers	1 day	50 per program	Local—Ashanti Region
	10. Agro-Inputs Marketing Training Program	Agro-Inputs Retailers	14 days	5	International—Bangladesh
	11. Fertilizer Marketing Management Training Program	Agro-Inputs Retailers	35 days	2	International—U.S.
	12. Effective Promotion of Agricultural Inputs	Agro-Inputs Retailers	3 days	25	Local—Northern Region
	13. Seed Certification Workshop	Seed Producers	2 days	20	Local—Accra
	14. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Refresh)	Extension Officers	1 day	50	Local—Northern Region
	15. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Refresh)	Extension Officers	1 day	50	Local—Ashanti Region
	16. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Refresh)	Extension Officers	1 day	50	Local—Accra Region
	17. Training Program for Agricultural Extension Officers in Fertilizer and Seed Technology (Refresh)	Extension Officers	1 day	50	Local—Upper Region
	18. Agro-Business Management Training Program	Company Officers	<u>90 days</u>	<u>3</u>	International—U.S.
	Subtotal		163 days	630	
	Grand Total		930 days	2,561	

Implementation of the workplan for establishing a sustainable commercial seed and fertilizer industry in the hands of the private sector requires a core staff of four (4) resident expatriate specialists and six (6) long-term national staff. The staffing schedule for the Privatization Advisory Team (PAT) is presented in Table VIII-8. In addition to the resident consultants and long-term national staff, subject-matter specialists (both expatriate and resident short-term consultants) will be used as needed. A summary of technical specialists' staff time devoted to the project is shown in Table VIII-9.

The following are the specific responsibilities of the PAT.

1. Resident Expatriates

a. Seed and Fertilizer Marketing Specialist

The Seed and Fertilizer Marketing Specialist is to be chief of party and provide overall administration for the PAT and project. The Marketing Specialist will also assist and advise on:

- (i) Private company selection and development.
- (ii) Selection and development of private retailers.
- (iii) GOG matters concerning the withdrawal from the seed and fertilizer business.
- (iv) Development of marketing systems, including product determination, procurement, and pricing for private organizations.
- (v) Organization and conduct of training programs necessary to support the human resource needs of a privatized seed and fertilizer industry (e.g., extension agents, retailers, SFIU staff, crop agronomists, etc.).
- (vi) Development of a SFIU.
- (vii) Development of a mass media educational program on the value of improved seed, the use of fertilizer, and the importance of shifting to profitable farming.
- (viii) Development of improved linkages between the GOG and the donor community.
- (ix) Development and enactment of policy required to support the privatized system.

Table VIII-8. Privatization Advisory Team Staffing, 1992-95

Positions	1992	1993	1994	1995	Total
	------(months)-----				
A. Expatriates – Residents					
1. Seed and Fertilizer Marketing Specialist	12	12	12	12	48
2. Marketing Economist Specialist	10	12	12	12	46
3. Seed Industry Specialist	10	12	12	10	44
4. Credit Specialist	9	12	12	3	36
B. Expatriates – Short Term					
1. Agronomy Expert	1	1	-	-	2
2. Policy Expert	1	2	1	-	4
3. Seed Production Expert	1	-	1	-	2
4. Seed Engineer Expert	-	3	-	2	5
5. Seed Training Expert	1	1	1	1	4
6. Credit Expert	2	-	1	3	6
7. Information and Communication Expert	-	1	-	1	2
Subtotal Expatriates	47	56	52	44	199
C. Nationals – Long Term					
1. Marketing Specialist	6	12	12	12	42
2. Data Collection Specialist	3	12	12	12	39
3. Data Analysis Specialist	-	6	12	12	30
4. Seed Production Specialist	3	12	12	-	27
5. Seed Equipment Specialist	3	12	6	-	21
6. Rural Credit Specialist	6	12	12	12	42
D. Nationals – Short Term					
1. Training/Administration Expert	3	6	3	3	15
2. Fertilizer Marketing Expert	2	2	1	1	6
3. Seed Expert	-	3	3	-	6
4. Computer Expert	1	2	2	1	6
5. Credit Expert	1	1	1	1	4
6. SFIU Data Analysis Expert	-	2	1	-	3
Subtotal National	28	82	77	54	241
Total Professional Staff	75	138	129	98	440
E. National – Support Staff					
1. Clerks (2)	24	24	24	24	96
2. Bookkeepers (1)	12	12	12	12	48
3. Secretaries (5)	48	60	60	42	210
4. Drivers (5)	48	60	60	40	208
5. Guards (4)	48	48	48	48	192
Total Support Staff	180	204	204	166	754
Total Personnel	255	342	333	264	1,194

Table VIII-9. Staffing Plan for Privatizing the Seed and Fertilizer Industries

Classification	1992	1993	1994	1995
	----- (workmonths) -----			
Expatriate residents	41	48	48	37
Expatriate short-term consultants	6	8	4	7
National long-term	21	66	66	48
National short-term	<u>7</u>	<u>16</u>	<u>11</u>	<u>6</u>
Subtotal	75	138	129	98
National support staff	<u>180</u>	<u>204</u>	<u>204</u>	<u>166</u>
Total	255	342	333	264

b. Marketing Economist Specialist

The Marketing Economist will provide assistance on each of the duties outlined in (a) above for the Marketing Specialist. In addition the Marketing Economist will focus on:

- (i) Providing assistance on determining the economic viability of the selected potential seed and fertilizer companies.
- (ii) Providing guidance on pricing of seed and fertilizers.
- (iii) Advising on the availability of seed and fertilizer supplies.
- (iv) Assisting with process for monitoring crop value:cost ratios.
- (v) Coordinating the development and implementation of training programs.
- (vi) Monitoring of changes in macro and microeconomic policies and assessing their impact on privatization.

c. Seed Industry Specialist

The Seed Industry Specialist will specifically assist with items outlined in (a) above that relate to the seed industry. In addition the specialist will be responsible for:

- (i) Guiding the privatization of the seed industry from production of foundation seed to certified seed and distribution to the retail network.
- (ii) Recommending practices the retailer should adopt regarding storage, pricing, promotion, and selling of seed.
- (iii) Assisting and advising the private companies on seed production, seed processing, quality control, storage, packaging, and equipment requirements.

- (iv) Advising and assisting with the development of a seed growers' association
- (v) Helping to establish a national seed committee.

d. Agricultural Credit Specialist

The Agricultural Credit Specialist will assist with those activities outlined in (a) above that relate to credit. Specifically the Agricultural Credit Specialist will be responsible for:

- (i) Working with banks and other organizations that finance agriculture supervisory programs for generating financial resources necessary for privatizing the seed and fertilizer industries.
- (ii) Carrying out pilot operation to develop field warehousing capacity in credit-deficit areas.
- (iii) Conducting surveys to identify credit sources, determining finance availability and credit needs at all levels in the seed and fertilizer industry.
- (iv) Assisting with the formation and development of an agricultural lenders' forum and rural credit committee.

2. National Long-Term Counterparts

a. Marketing Specialist

The Marketing Specialist is to assist with seed and fertilizer marketing and policy requirements to support a viable seed and fertilizer industry. He will assist the Seed and Fertilizer Marketing Specialist and the Marketing Economist Specialist primarily, however there can be assignment with other staff members.

b. Data Collection Specialist

The Data Collection Specialist will assist with surveys to determine seed fertilizer and credit supply. Data will be collected on consumption by farming groups and sales by private companies. The specialist will assist with forms required for communicating in the seed and fertilizer industries, i.e., invoices, inventory sales, etc. The specialist will assist with storage of data. The Data Collection Specialist will assist the marketing economist.

c. Data Analysis Specialist

The Data Analysis Specialist will assist with the analysis of data collected and reporting of data. The specialist will recommend data processing techniques to meet the needs of the seed and fertilizer industries. The Data Analysis Specialist will assist the Marketing Economist.

d. Seed Production Specialist

The Seed Production Specialist will assist with all aspects of foundation and certified seed production. The specialist will assist the Seed Industry Specialist.

e. Seed Equipment Specialist

The Seed Equipment Specialist will assist in training staff and installing, operating, and maintaining seed equipment. He will assist industry firms in procuring, installing, and operating seed equipment. The specialist will assist the Seed Industry Specialist.

f. Rural Credit Specialist

The Rural Credit Specialist will assist in the formulation of programs to increase the availability of credit in rural areas for seed and fertilizer businesses. In addition, the specialist will assist the Agricultural Credit Specialist in supervising credit initiatives undertaken to link bank and agro-input retailers.

3. Short-Term Consultants

A number of specialists will be required to bridge special problems and voids as the privatization of the seed and fertilizer industries proceeds. Anticipated consultants and their areas of expertise are:

a. Expatriates

- (i) Agronomy Expert – Soil fertility
- (ii) Seed Production Expert – Techniques
- (iii) Seed Engineer Expert – Equipment
- (iv) Seed Training Expert – Transfer of technology
- (v) Credit Expert – Systems
- (vi) Information and Communication Expert – Building information units
- (vii) Policy Expert – Seed and Fertilizer

b. Nationals

- (i) Training/Administration Expert – Planning and conducting courses
- (ii) Fertilizer Marketing Expert – Farmer requirements and retailer functions
- (iii) Seed Expert – Foundation and certified seed production
- (iv) Computer Expert – Data analysis and computer use
- (v) Credit Expert – Knowledge of credit systems
- (vi) SFIU Data Analysis Expert – Collection of data and means of making it useful.

4. National Support Staff

National support staff will be required to support the PAT. Areas identified are:

- (i) Clerks (2) – Filing, tabulating, and general office work
- (ii) Bookkeepers (1) – Accounting for project expenditures
- (iii) Secretaries (5) – Typing, receptionist, and general office work
- (iv) Drivers (5) – Messengers and driving
- (v) Guards (4) – Office security

I. Project Administration

1. Autonomy

It is important that the PAT be considered an independent entity. This image is necessary for efficiency in helping to privatize the seed and fertilizer industries. The PAT should not be considered an arm of the GOG or USAID. A government arm label could tend to make the private-sector players overly cautious of implementing suggestions from the PAT.

2. Accountability

Although it is necessary that the PAT have operational autonomy, it will be responsible and accountable to USAID/Ghana.

3. Collaboration

The PAT will work in collaboration and harmony with the GOG and its related ministries and especially the MOA and its departments, e.g., CSD, GSIU, NSS, CRI, CSIR, FASCOMs, Extension Service, etc. The MOA will have agreed to the PAT action programs prior to implementation. The MOA will be responsible for keeping the GOG informed on the privatization project and the status of action programs. The MOA will have the responsibility for coordinating and clearing projects within the GOG as required. Equally important, the PAT will work in close collaboration with private-sector seed and fertilizer companies to assist with orderly development of their operations. Finally, the PAT will liaise with donors and relevant international organizations to ensure consistence in development programs and to avoid an unnecessary duplication of efforts.

4. Supervision

The PAT team leader will be the primary connecting link between USAID and the GOG. The PAT will keep USAID and the GOG advised of all activities. The PAT will provide a mid-term progress report and a final project completion report as indicated in the privatization plan.

IX. Cost Estimate and Financial Plan

A. Estimate of Expenditures

Under the project, USAID will finance technical assistance, short-term training in the United States and in Ghana, and equipment. All support costs related to this project will also be funded by USAID. A summary of the financial plan is presented in Table IX-1 with details provided in Appendix VI.

As indicated in Table IX-1 the estimated expenditure over the 4-year life of the project totals \$10,087,939. This is based upon the following assumptions regarding (1) staffing, (2) training of nationals, and (3) equipment purchases.

1. Staffing

- a. A total of 175 workmonths of resident consultant technical assistance.
- b. A total of 25 workmonths of expatriate short-term consultant technical assistance.
- c. A total of 201 workmonths of full-time national counterpart technical assistance.

2. Training

- a. A total of 65 workmonths of short-term training at international programs.
- b. A total of 176 workmonths of short-term training in Ghana.

3. Equipment

- a. Seed production, processing, and quality control equipment valued at \$246,300.

The estimated expenditures include direct costs of \$6,616,244, indirect costs of \$2,882,268, and equipment costs of \$246,300. A 5% contingency (or \$343,127) is included in the budget. An estimated 27% of the planned expenditures will be in cedis.

Table IX-1. Proposed Budget--Privatization of the Seed and Fertilizer Industries in Ghana

Cost Classification	Year 1			Year 2			Year 3			Year 4			Project Total 1992-95		
	US \$	Cedis ^a	Total	US \$	Cedis ^a	Total									
I. Resident consultant related costs	688,750	177,840	866,590	776,924	185,624	762,548	633,705	204,186	837,891	591,172	340,551	931,723	2,490,551	908,201	3,398,753
II. Short-term expatriate consultant related costs	85,840	10,000	95,840	119,610	13,000	132,610	73,545	12,000	85,545	118,364	13,000	131,364	397,359	48,000	445,359
III. National consultant related costs	0	18,750	18,750	0	58,300	58,300	0	57,900	57,900	0	42,250	42,250	0	177,201	177,201
IV. Training related costs	247,700	103,550	351,250	196,835	170,780	367,615	139,285	153,120	292,405	145,855	99,115	244,970	729,675	526,565	1,256,240
V. In-country office support	153,200	343,850	497,050	222,000	177,820	399,820	70,770	194,650	265,420	49,247	204,058	253,305	495,217	920,378	1,415,595
VI. IFDC Headquarters related direct costs	35,500	1,000	36,500	39,050	1,100	40,150	42,955	1,210	44,165	47,251	1,331	48,582	164,756	4,641	169,397
Total Items I-VI	1,210,990	654,990	1,865,980	1,154,419	606,624	1,761,044	960,260	623,067	1,583,327	951,889	700,305	1,652,194	4,277,558	2,584,986	6,862,544
Contingency @ 5%	60,549	32,750	93,299	57,721	30,331	88,052	48,013	31,153	79,166	47,594	35,015	82,610	213,878	129,249	343,127
Overhead @ 40% ^b	783,712	-	783,712	739,638	-	739,638	664,997	-	664,997	693,921	-	693,921	2,882,268	-	2,882,268
Total Budget	2,055,251	687,740	2,742,991	1,951,779	636,955	2,588,734	1,673,270	654,220	2,327,490	1,693,404	735,320	2,428,724	7,373,704	2,714,235	10,087,939

a. Cedi value expressed as US \$ equivalent.

b. Overhead on cedi expenditure to be reimbursed in U.S. currency.

X. Marketing of Agricultural Output

A. Introduction

Farmers are in the business of making money. A package of crop production practices is needed for the farmer to make money. Inputs, sound cultural practices, and a favorable environment are but one side of the ledger. The farmers must also have a place to sell their crop produce at a "fair" market price. The prices received must help to produce a favorable value:cost ratio or else the farmer will shift to other enterprises. Ever how humble the exercise may be, the farmer will allocate limited resources to the crop they think will generate the best level of living.

If Ghana's largely subsistence-oriented agriculture is to move fully into the monetary economy, farmers must shift to higher levels of production and consistently generate surplus to be sold in the market. This shift has considerable inherent risk and farmers must be rewarded by the market not only for the incremental labor but also for the precious capital they must risk when they invest in agricultural inputs. In the past the Ghanaian farmer has been induced by extension activity to assume the risks associated with the adoption of new technology that has significantly increased their production. Unfortunately, the farmer has found the market volatile, market prices often falling precipitously at the same time as their surplus came to the market.

The "marketing problem" is multifold and has many limitations coming from infrastructural constraints and other rigidities in the markets for agricultural commodities. Limitations imposed by Ghana's interdependence with external markets is also a problem. Over time, crops brought into the market will bring rewards according to Ghana's comparative advantage in producing them.

B. Constraints

The market for agricultural commodities has many constraints. Among the most important of these are:

1. Inadequate rural infrastructure resulting in high transport costs (transport costs are estimated at 50%-70% of the marketing margin).
2. Poor quality control in marketed surplus.
3. Lack of agro-processing to bring value-added to surplus.
4. Lack of uniform standards and weights.
5. Inadequate market facilities including timely and accurate price information.
6. Direct government marketing activities that undermined development of private-sector involvement.

7. Inadequate credit to finance on-farm storage.
8. Absence of diversified agricultural marketing system.

C. Marketed Crops and Production Levels

As a percentage of agricultural GDP, marketed crops are important and growing (Table X-1). However, subsistence-oriented production exceeded the contribution of all cereals combined. These subsistence crops, in general, do not have well-developed markets or improved technical packages. Importantly also, they do not, on the whole, provide the same economic opportunity to farmers as do cereals and other cash crops.

Table X-1. Contribution of Crops to Agricultural GDP

Crop	Contribution to GDP (%)
Cassava	22
Cocoa ^a	14
Yam	13
Plantain	11
Cocoyam	9
Cereals	7
Other including livestock and forestry	24

a. Marketed by Government.

Source: MOA (1987).

Because of the economic opportunity provided farmers, maize in the period 1982-88 grew more rapidly than other crops. It had a 33% average annual growth in production and 20% average annual growth in productivity of land (almost double that of cassava). As of 1990, cereals had consistently maintained growth in production while cassava, plantain, and cocoyam (subsistence crops) declined *vis-à-vis* a base year of 1984-86. Thus the market has induced a production response in farmers. The problem is how long it will continue with the price volatility.

D. Financial Incentives to Use Improved Seeds and Fertilizers

Prices have gone against farmers in the last few years. This reflects output surpluses at periods of harvest. The decline in prices is dramatic in some cases. By 1990 real maize and rice prices were down 25% and 14%, respectively, against 1987 prices (Table X-2). Root crops did worse, cocoyam going down 66% and cassava 31%.

Table X-2. Changes in Real Average Rural Wholesale Prices 1984/86-90, 1987-90

	1984/86-90 ^a (%)	1987-90 (%)
Maize	+3.4	-25
Millet	-13.3	-1.27
Sorghum	-19.4	-9.38
Rice	-10.9	-14.38
Cocoyam	-34.2	-65.73
Cassava	+29.2	-31.11
Tomatoes	+83.7	+20.00

a. Using indices based on 1984-86.

Source: MOA (1990).

These declines, which often were disincentives in themselves to farmers, were made worse by extreme price volatility in seasonal markets. Price spreads within any given year went as high as 107% (in the case of maize) and were substantial in other cereal crops (Table X-3).

Table X-3. Seasonal Price Spread for Cereals (1980-88)

Cereal	Lowest Price Index	Highest Price Index	Spread	Spread as % of Lowest Price Index
Maize	70	145	75	107
Millet	74	122	48	65
Sorghum	70	120	30	71
Rice	77	120	43	50

Source: MOA (1990).

Adequate financial incentives are essential to increase agricultural output. All farmers are sensitive to changes in relative input-output price relationships, and fertilizers constitute the main purchased agricultural input. If farmers estimate that the use of improved seed and fertilizer is nonprofitable, they will not buy them. Hence, to a large degree, success of the seed and fertilizer privatization program hinges upon fertilizer use being profitable.

As previously indicated, following 3 years of the combined effect of declining crop prices and increasing fertilizer prices, the benefit:cost ratio for fertilizers now ranges from 1.35 for oil palm to 2.29 for maize. Given the inherent risks involved in farming (e.g., weather, pests, crop prices, etc.), fertilizer use is now only marginally attractive. In fact, for nonfertilizer users, the financial incentive to start using fertilizers is not as attractive as it should be.

Integral components of the privatization program will be to (1) monitor fertilizer:crop price relationships and encourage policy decisions to foster a stable economic environment for fertilizer use, (2) encourage efficiency in seed and fertilizer marketing and thereby reduced input prices, (3) promote the development of a low cost production credit system that will enable farmers to purchase inputs, (4) promote more efficient cropping practices, and (5) encourage the formation of farmer organizations to coordinate output marketing activities (e.g., on-farm storage of crop produce to take advantage of seasonal price fluctuations, group selling, etc.).

E. Comparative Advantage in Ghana's Agricultural Production

While market constraints do hinder efficient marketing of cereals in Ghana, much of the problem faced by farmers producing grain surpluses is that Ghana's comparative advantage in agricultural production may lie elsewhere. Studies conclude that Ghana is competitive in the areas of tree crops (cocoa, coffee, cola nuts), industrial crops (cotton), and fruits and vegetables.

Estimates of international competitiveness using Domestic Resource Costs (DRCs) show that while cereals are competitive at farm-gate and rural market levels, they are not so at the wholesale market level. Lack of competitiveness at this level may reflect a fundamental limitation of Ghanaian grain production as compared to cheap imports. Sensitivity analysis of factors affecting these measures of competitiveness shows that yield and level of international prices were important while cost of transport and fully costed fertilizer were not.

Growth in the markets for agricultural commodities will thus tend to move along two separate courses. Markets for food crops will likely develop in line with domestic food demand. For those commodities in which Ghana is competitive, markets could expand rapidly following the growth of export sales. The growth in pineapple exports is evidence of this potential. From 1987 to 1990, pineapple exports rose from 4,125 tons to 9,800 tons--a growth of 137% in 4 years.

Agricultural inputs, particularly fertilizer, will be required to facilitate growth in these markets. First, essential inputs will be required to sustain food production and second, inputs will be needed to propel export-oriented marketing of crops such as fruits and

vegetables which are heavy fertilizer consumers. Additionally, the development of an active private-sector network selling inputs is likely also to have an impact on output marketing, inasmuch as it provides an opportunity for input retailers to diversify profit making at the rural level.

F. Structured Markets

To maintain and increase crop production, farmers must have structured crop produce markets. A structured market has several component parts and includes the following.

1. The market is of a permanent nature. The market can be a physical facility such as a store, warehouse elevator, or a place where buyers and sellers meet and sales are arranged on a scheduled basis.
2. Marketing functions are available, e.g., accumulation, storage, packaging, grading, processing, pricing, shipment, and buying and selling activities offered to the public.
3. Crop production practices and technology can be obtained. How to grow better crops, e.g., seed and plant varieties, fertilizer rates and practices, and agro-chemical recommendations are disseminated to farmers. Advice on how to harvest and package for markets is generally provided. The source of information can be from research, extension, or the private companies.
4. Availability of market information. A mature structured market will follow domestic and international supply and demand situations on crop produce and be in a position to appraise farmers of the crop potential that appears to be most attractive for a given area.
5. Immediate payment for produce. Farmers do not normally have to wait for payment. In many situations a partial payment is made to the farmer pending the final movement of the produce to another organization. This can be the situation when a retailer is a buying agent for another organization.
6. Transportation is available. In many situations, farmers need assistance with transportation. An organized market may offer transportation of crop produce at a fixed rate.
7. A source of informal credit. Credit can be offered in kind or in cash to creditworthy farmers. A good example is the Pioneer Tobacco Company contracting with farmers to grow tobacco whereby they offer inputs and a ready market.
8. Special harvesting and packaging equipment. In many situations special equipment can be needed for harvesting, storage, and marketing. Packaging for vegetables, fruits, and flowers is a good example of where special equipment may be required.

9. Added value to crop produce. A mature structured market will often provide a place where crop produce can be processed into another form.
10. A source of crop production inputs. A structured market will make the essential crop production inputs available to farmers on a timely basis.

G. Role of Retailers In Crop Produce Marketing

The privatized seed and fertilizer industries will have a network of wholesalers, retailers, and stockists in due time. It is the nature of the privatized system to penetrate markets and push into profitable enterprises and territories. Crop produce marketing can provide such an opportunity. The system that delivers inputs to the farmer can also utilize the same system to take crop produce from the farmer to the city consumer, processor, or larger markets. The physical flow of products in the privatized system can be a two-way process:

Company <—> Wholesaler <—> Retailer <—> Farmers

The seed and fertilizer marketing system will be encouraged to play an important role in crop produce marketing. The retailer developed in the privatized system will have the respect of farmers in the area and can provide the farmer with a dependable market. Characteristics of the private retailer in regard to crop marketing include:

1. A physical place for the collection and sale of crop produce.
2. A source of informal credit although on a limited basis. Credit can be in kind with farmers settling their loan when the produce is sold.
3. Marketing intelligence on crops offering the greatest opportunity to farmers.
4. A buying agent on behalf of other organizations.
5. A complete package of inputs, technology, and a market for crop outputs.
6. A part of a double-edge marketing system.

XI. Project Benefits and Analysis

A. Introduction

The purpose of privatizing the seed and fertilizer industries in Ghana is to increase food production at a lower cost per unit. To accomplish this, a number of actions must take place such as withdrawal of the GOG in direct seed and fertilizer marketing, training of personnel to manage a privatized system, changing the attitudes of the farming community, etc. These actions in a way are also benefits and certainly provide a catalyst that makes increased food production at lower cost a real possibility. The benefits resulting from the privatization project will impact the entire Ghanaian economy.

B. Project Benefits

Four of the key benefits resulting from the privatization project are: (1) increased use of improved seed, (2) increased fertilizer use, (3) increased farmer participation, and (4) increased private-sector involvement. The remaining benefits will generally only impact one of the analysis sections. Economic, social, and technical analysis of these benefits are discussed after describing these benefits in detail. The benefits are also described in the project output in the "Logical Framework" in Appendix VII.

1. Use of Improved Seed

It appears that the Ghanaian farmer has not really had an opportunity to experience the benefits of using improved seed. For reasons discussed in the current seed situation, improved seed has not been available to farmers on a wide scale. More research may be needed for better varieties of seed. More production and better quality control may be needed. Whatever the reason may be for the farmer not having used improved seed, the privatized seed industry will develop the market for improved seed available to farmers. It is estimated that the use of improved maize seed will increase from 5% of the market at present to at least 50% by 1995.

2. Fertilizer Use

It is expected that the project will reverse the recent trend in fertilizer use and accelerate growth in fertilizer use in the 1990s. Because of the restructuring effort and the resulting increase in prices, fertilizer use will decline from an estimated 28,000 product tons in 1990 to about 25,000 tons in 1992. After 1994, growth in fertilizer use will accelerate and by the year 2000 will increase to almost 84,000 tons of product (Table XI-1). Because the project will promote high nutrient fertilizers like urea, DAP, and MOP, nutrient use will increase from about 10,000 tons in 1990 to an estimated 33,600 tons in the year 2000. The

average nutrient content of fertilizer will increase from around 33% to 40%. Farmers will benefit by paying a relatively lower cost per unit of nutrient.

Table XI-1. Fertilizer Demand Projections, 1989-2000

Year	Product (tons)	Nutrient (tons)	Farmers (%)	Area Using Fertilizer (%)	Decrease in Average Cost (%)
1989 (Actual)	32,657	11,350	18	10	-
1990 (Estimated)	28,000	9,800	15	10	-
1991	28,000	9,800	15	10	-
1992	25,000	8,750	15	9	-
1993	30,000	10,850	16	9	-
1994	35,000	12,250	17	10	5
1995	41,000	14,000	18	12	7
1996	47,000	16,450	20	15	10
1997	55,500	19,250	25	18	15
1998	64,000	24,320	30	21	20
1999	74,000	28,120	35	25	25
2000	84,000	33,600	40	30	30

3. Farmer Participation

In 1990 only about 18% of farmers used fertilizers. It is expected that by the year 2000, about 40% of farmers would be using fertilizers. More and better retailers and an improved extension system will help in increasing farmer participation in the use of improved seed and fertilizers. Likewise, area fertilized is expected to increase by 100,000 ha during the period 1990 to 2000. Shifting cultivation or slash and burn, as it is popularly called, is an expensive exercise; it is environmentally unacceptable and agronomically unsustainable. When farmers learn that by using improved seed and appropriate fertilizer yields will not decline, the practice of shifting cultivation will decline. The privatization project will get this message to the farmers.

4. Private-Sector Involvement

The privatized marketing system will be more efficient than the present one. It is estimated that farmers will pay about 20%-30% lower prices for fertilizer products compared with the prices they would pay if the existing system continued without subsidies (explicit and implicit). The estimates of reduced costs of fertilizer marketing are based on

similar experiences in other developing countries where systems based on private-sector management principles have been implemented.

It is difficult to estimate the number of firms that will enter the seed and fertilizer business. As a result of the privatization effort it is anticipated that a fully competitive market will develop. The number of seed and fertilizer businesses in the year 1995 is estimated as follows:

■ Integrated fertilizer companies	3
■ Agro-input retailers	200
■ Seed and fertilizer stockists	1,000
■ Seed companies	3
■ Fully developed seed growers	40
■ Seed growers	250

C. Economic Analysis

Although the main objective of the project is to promote private-sector participation in the seed and fertilizer industries through technical assistance and training the project will generate several quantifiable and non-quantifiable economic benefits. The quantifiable benefits of the project would include macroeconomic impacts on gross domestic product (GDP), balance of payment and fiscal resources, food security, income and employment benefits for small farmers, and human capital formation. The non-quantifiable benefits are: efficient and equitable marketing systems for the seed and fertilizer industries, democratization of ownership of capital assets and decisionmaking, improved research and extension systems, and management skills that will act as a catalyst for the rest of the economy. Furthermore, the management skills and systems developed under the project will spare scarce administrative resources of the Ministry of Agriculture so that these resources can be concentrated on providing effective leadership, quality control, and institutional and infrastructural support to these and other sectors of the economy.

Under the ERP introduced in 1983, the Government has implemented several policy and institutional reforms. These reforms created favorable incentives for both traditional and nontraditional sectors of the economy and thereby generated growth in gross national income, agricultural and industrial output, and export earnings during the 1983-90 period. For example, annual growth in real GDP averaged between 4% and 8% and per capita income between 2% and 6% during this period (Table XI-2). Likewise, production of several agricultural commodities like cereals (maize, rice, sorghum, and millet), cocoa, cassava, yam, and groundnut also increased significantly, although because of adverse weather in 1987 and 1990, the production of many of these commodities registered declines (Table XI-3).

Table XI-2. Selected Economic Indicators

Output and Prices	Annual Percentage Change Unless Otherwise Indicated										
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990 ^a
	------(%)-----										
GDP Deflator	51.2	75.7	27.9	123.0	35.3	20.6	41.7	39.2	33.5	26.5	38.6
Real GDP Growth Rate	0.5	3.5	6.9	4.6	8.6	5.1	5.2	4.8	6.2	6.1	4.2
Agriculture	2.1	2.6	5.5	7.0	9.7	0.6	3.3	0.0	3.6	4.9	2.5
Industry	0.3	16.0	17.0	12.0	9.1	17.6	7.6	11.5	11.4	7.4	7.9
Services	2.3	3.3	3.6	2.6	6.6	7.5	6.5	9.4	7.8	6.7	4.5
Inflation (cpi) ^b	30.1	116.5	22.3	122.8	39.6	10.4	24.6	39.8	31.4	25.2	38.6
Per Capita Income	2.5	6.5	9.9	7.6	5.6	2.1	2.2	1.8	3.2	3.1	1.2
Nominal GDP Growth	51.8	69.5	19.0	112.9	47.0	26.8	49.1	45.9	41.8	34.2	44.4
Population Growth Rate	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Exchange Rate ^c	2.8	2.8	2.8	25.0	35.9	54.4	98.9	165.0	205.0	270.0	340.0

a. Estimate.

b. cpi = consumer price index.

c. ₺ per US \$.

Source: Ministry of Finance and Economic Planning.

Table XI-3. Production of Some Major Crops in Ghana, 1983-90

Year/Crop	1983	1984	1985	1986	1987	1988	1989	1990
	----- ('000 tons) -----							
Maize	140.8	574.0	395.0	559.1	597.7	600.0	715	553
Rice	26.9	76.0	80.0	69.6	80.7	95.0	67	81
Millet	114.4	139.0	120.0	109.9	173.1	190.0	200	75
Sorghum	105.8	176.0	185.0	128.1	205.9	240.0	300	136
Cassava	1,375.5	4,065.0	3,075.0	2,876.2	2,725.8	3,300.0	3,320	2,717
Cocoyam	613.2	2,835.0	900.0	1,005.2	1,011.8	1,115.0	1,200	815
Yam	354.3	725.0	560.0	1,048.0	1,185.4	1,200.0	1,280	877
Plantain	754.7	1,234.0	1,350.0	1,087.5	1,077.6	1,200.0	1,040	799
Groundnut	91.1	167.0	140.0	190.3	190.7	2,300	200	113

Source: PPMED Statistics Division, Ministry of Agriculture (1991).

In spite of these achievements, Ghana has experienced deficits in its external account (balance of payment) and high debt service ratio (Table XI-4). Ghana's debt service ratio increased from less than 10% in 1980 to 58% in 1987. That is, 58% of Ghana's export earnings were used to pay interest on and repayment of long- and short-term debt. The World Bank estimates indicate that Ghana would need about US \$741 million per year in foreign exchange during 1991-93 (Table XI-5) to service its debt and funds for industrial imports.

Table XI-4. Balance of Payment

	1980	1983	1985	1987	1990	1993
Current account balance ^a (million \$)	-55	-230	-264	-224	-479	-491
Debt service ratio (%)	10	NA ^b	NA	58	80	23

a. Excluding official grants.

b. NA - not available.

Source: World Bank.

Table XI-5. Ghana: External Financing Requirements and Resources, 1990-93

	1990	1991	1992	1993	Total	Yearly Average (1990-93)
	----- (million US \$) -----					
Requirements	-781.8	-878.3	-659.8	-685.0	-2,223.0	-741.0
Current account deficit, excluding official grants	-478.7	-514.0	-446.2	-490.8	-1,471.0	-490.3
Medium- and long-term debt amortization	-124.9	-101.4	-96.5	-102.0	-229.9	-100.0
Other capital outflows ^a	-7.6	-5.6	-7.0	-2.1	-14.7	-4.9
IMF repurchases ^b	-112.6	-80.8	-65.4	-67.6	-213.8	-71.3
Trust Fund repayments	-3.6	-0.5	-	-	-0.5	-0.2
Reduction in payment arrears	17.3	-	-	-	-	-
Increase in gross official reserves	-20.3	-176.0	-24.6	-22.4	-223.1	-74.4
Reduction in other net foreign liabilities of Bank of Ghana ^c	-16.8	-	-	-	-	-
Resources	781.8	878.3	659.8	685.0	2,223.0	741.0
Official grants (net)	219.8	236.8	228.0	227.8	692.6	230.9
Long-term loan disbursements	354.6	390.6	397.0	411.0	1,198.6	399.5
Medium-term loan disbursements	62.5	54.3	25.3	24.6	104.2	34.7
Other capital inflows	62.9	29.7	9.5	21.6	60.8	20.3
Bilateral trade agreements	17.0	-	-	-	-	-
Use of Fund resources	65.0	166.9	-	-	166.9	55.6
Of which: SAF and ESAF	65.0	166.9	-	-	166.9	55.6

a. Including short-term capital outflows, and net errors and omissions.

b. Including SAF and ESAF repayments.

c. Excluding external payments arrears and liabilities to the Fund.

Sources: Data provided by the Ghanaian authorities and Fund and World Bank staff estimates and projections.

Thus, Ghana has to promote its export earnings to reduce deficits in its external account and provide foreign exchange for the import of technical know-how and raw materials for growth in agricultural and industrial output. This has to be achieved through promotion of exports of traditional goods like cocoa and gold and through diversifying its exportables into nontraditional commodities.

In addition to generating a favorable balance in its external account, Ghana also faces other challenges in the 1990s. Some of these challenges are: control of inflation from 37%

in 1990 to about 5% in the mid-1990s so that the real interest rate becomes positive, 5% annual growth in GDP and 4% annual growth in agricultural sector, rehabilitation of physical and institutional infrastructures, and improvement in living standards of the people. Furthermore, it has to streamline its administrative and financial infrastructures, provide employment to a growing labor force, and promote private-sector involvement in productive activities, because inadequacies in these areas has prevented Ghana from realizing its full potential created by a favorable incentive environment through policy reforms of the 1980s.

In meeting these macroeconomic challenges, the privatization project will make the following contributions.

1. Foreign Exchange Savings

The project will contribute towards foreign exchange resources of Ghana in three different ways: First, the project expenditures of over US \$6.2 million will contribute directly to the availability of foreign exchange in Ghana. Second, by increasing fertilizer use, the project will contribute towards increased food-grain production in the country. Currently, Ghana has a deficit in its food balance sheet. In 1989, Ghana's grain imports amounted to 141,000 tons. Unless increased production is achieved, Ghana will have a food deficit of 775,800 tons in the year 2000. Hence, this project will help in saving foreign exchange by reducing food imports. Third, the project will help in increasing the yield and productivity of non-food crops and non-cereal food crops through the use of efficient and environmentally safe fertilizer. Increased production of non-food crops will help in export promotion through diversification and therefore will earn foreign exchange for the country. Through import substitution of food imports and export promotion of non-traditional agricultural products, the project will make a net contribution of about US \$40-60 million annually after 1995.

2. Fiscal Savings

Although nominal subsidies on fertilizer use were removed in 1990 (Table XI-6), there is still a considerable implicit/hidden subsidy on fertilizers in Ghana. This subsidy is in the form of interest on capital tied up in excessive fertilizer stocks, rental charges on warehouse and storage space, and retailer discounts. A conservative estimate of these costs to the society was $\text{c}3.2$ billion or US \$9.25 million in 1990. This project will move these responsibilities from the government to the private sector, enabling the government to save or redirect to other areas these scarce fiscal resources. Furthermore, the government will earn an additional income of $\text{c}14.5$ million per year from leasing agricultural input storage space to the private-sector retailers.

Table XI-6. Fertilizer Prices and Subsidy, 1979-90

Year	Compound Fertilizer ^a ----- (¢/50-kg bag)-----	Straight Fertilizer ^b -----	Subsidy ^c (%)
1979	10	8	80
1980	15	12	65
1981	30	25	45
1982	30	25	45
1983	58	45	45
1984	440	295	45
1985	440	295	59
1986	780	490	36
1987	1,380	1,270	42
1988	2,300	1,600	30
1989	3,350	2,100	15
1990	4,200	3,500	0

a. 15-15-15 and 20-20-0.

b. Muriate of potash.

c. Nominal subsidies have been removed, yet implicit subsidies remain.

Source: MOA (1990).

3. GDP Growth

To achieve annual growth of 5% in the GDP, agricultural GDP will have to increase by 4% per annum. Of this 4% annual growth, more than 1% will come from increased use of improved seed and fertilizers and more efficient cultural practices promoted by this project. In monetary terms, this contribution will amount to about ¢11 billion-¢13 billion gross a year during the 1995-2000 period.

4. Food Security

In 1987, Ghana imported 127,000 mt of cereals to bridge the food deficit. MTADP estimated that "if Ghana does not achieve a 4%-6% growth in food production by the year 2000, this deficit is expected to increase to 775,000 tons (about 18% of total demand)."

By building an efficient fertilizer and seed marketing system, the project will promote fertilizer use from the current low level of 10,000 tons of nutrient to about 33,600 tons of nutrient in the year 2000. Assuming that about 80% of this incremental fertilizer use will go towards food crop production, the incremental contribution of this project to food supply will be 187,000 tons in the year 2000. Thus, the project will narrow the food gap

from 775,000 tons to 588,000 tons, which has to be met through area expansion, irrigation development, more fertilizer responsive seed, and other measures. Furthermore, as most of the increased food production will come from small farmers in the rural areas, the project will also promote relatively greater food security at the household level.

5. Income and Employment in Rural Areas

Through increased use of improved seeds and fertilizers and, as a result, crop production, the project will help in generation of additional income and employment in rural areas. Evidence from other developing countries suggests that every dollar spent on fertilizer use generates additional income of \$2.00 and employment of 0.45 workdays. However, these benefits will occur only after 1995 when the project has successfully completed the involvement of private-sector retailers in fertilizer marketing.

6. Human Resource Development

Through training and technical assistance, more than 2,000 private retailers, bankers, farmers, and extension workers will receive training under this project. This human resource potential will generate greatly improved efficiency in the agricultural sector. This trained manpower will also create multiplier effects in terms of training other people involved in agriculture and rural development.

7. Institutional Development

The project will strengthen research, extension, and management capability of Ghana. The benefits of getting the private sector involved in the agricultural sector can not be quantified, because it will be a pace setter for other sectors as well. Indirectly, this will release the government from the burden of managing these subsectors and thereby spare scarce administrative capacity for other purposes.

8. Environmental Impact

The project will generate environmental benefits in two ways. First, through its training programs, it will educate the Ghanaian farmers, retailers, and extension workers about the use of efficient and environmentally safe fertilizer. This will prevent potential damage likely to result from inappropriate use of certain products like ammonium sulfate leading to soil acidification. Second, through intensive and yield-increasing cultivation practices and innovations, the project will prevent the excessive use of marginal lands and deforestation (e.g., slash and burn) leading to environmental degradation.

The World Bank estimates that annual crops planted in Ghana remove about 100,000 tons of nutrients from the soil every year. Against this, total nutrient use was

10,000 nutrient tons in 1989. Thus, current fertilizer use levels are replenishing only about 10% of the nutrients removed. Unless the removed nutrients are replenished regularly and sound cultural practices followed, the soils will lose their intrinsic fertility and become marginal and degraded over time.

By promoting fertilizer use in an efficient and environmentally-safe way, the project will help in replenishing the removed nutrients and thereby sustaining soil fertility and resource base.

D. Social Soundness Analysis

The 1990 study, *Fertilizer Requirements and Use in Ghana*, revealed that fertilizer use is highly inequitable in several respects. First, many small farmers do not have access to fertilizers. Only 18% of farmers currently use fertilizers, and most of these are large farmers growing cash crops. Second, only about 3.5% of the women farmers use fertilizers, whereas nearly 38% of women manage farms. Thus, there is a gender inequality. Third, fertilizer use is highly concentrated in certain regions; 4 of the 10 regions account for more than 60% of the total fertilizer use in Ghana.

The initiatives planned under the project will address inequalities in all these areas and will reduce such inequities. In particular, the project will arrange training programs for women and small farmers to promote fertilizer use. Likewise, the project's retailer development and extension education programs will spread fertilizer use in many remote areas and thereby reduce regional concentration.

In addition to addressing these inequalities, the project will also improve income distribution in rural areas, especially of those farmers who do not use improved seed and fertilizers and therefore, live at the subsistence level. The project's indirect effects will include employment generation for the rural labor force. Further, by making additional food grains available in rural areas, the project will have a desirable and healthy influence on improving the nutrition levels of people in Ghana.

1. Types of Crops Grown

Use of improved seeds and fertilizer has in most cases been limited to cash crops, especially cereal, cotton, and tobacco. The privatization of the seed and fertilizer industries will lead to an increase in the use of fertilizer for other crops. Thus, farmers who grow these other crops will increase productivity and their incomes.

2. Size of Farm

Fertilizer use is more dominant with large-scale farmers than small-scale farmers. Any program which seeks to expand the use of improved seeds and fertilizer would be of

immense benefit to small-scale farmers. About 90% of Ghana's agricultural production is produced by small-scale farmers. Thus, the success of the privatization effort would be of immense benefit to the small-scale farmer who will earn more income through effective use of improved seed and fertilizer. The nation will produce more food for its rising population and possibly export any surplus to earn foreign exchange. There is evidence that several farmers use improved seeds and fertilizer on vegetable farms cultivated on small plots. This implies that some farmers require improved seed and fertilizers in small quantities. The private sector will have the incentive to respond to the needs of the marketplace.

3. Availability of Credit

Studies in Ghana have shown that most of the farmers who do not use improved seeds and fertilizer do not have access to institutional credit or for that matter any form of credit. The use of improved seeds and fertilizer will lead to increases in production costs. Most farmers who do not use fertilizer are small-scale farmers, who have very limited cash for operating their farms. A provision or availability of farm credit would contribute towards sustained and viable private-sector fertilizer and seed industries. The removal of subsidies in improved seeds and fertilizers will lead to increase in prices of these inputs. A credit scheme is essential to help the farmers to purchase these inputs at higher prices. In addition to a credit scheme, farmers would have to be prepared through educational programs to absorb the price shocks. Improved seeds and fertilizer will now have to be delivered and used in a cost-effective manner. Waste and inefficiency would be reduced and farmers will acquire the practice of using credit profitably.

4. Characteristics of Improved Seed and Fertilizer Users

A higher proportion of male, *vis-à-vis* female, farmers use fertilizer (and possibly improved seeds). Similarly, improved seed and fertilizer usage is more common with middle aged and old farmers than with younger farmers. The young people possibly might have had less exposure and less access to credit for purchasing these inputs. A successful fertilizer business would have to take notice of the characteristics of fertilizer users and plan its marketing strategies accordingly. The project would ensure that fertilizer is used by all classes of people, on most crops, and on different farm sizes as long as its use is profitable. Furthermore, the project will result in an increase in the number of small farmers using fertilizer and therefore improve income distribution in rural areas.

5. Impact on Women

A higher proportion of women farmers are small-scale farmers. They use very little improved seeds and fertilizers. The project through the women's extension program will help these small-scale women farmers to use more improved inputs. The project will improve the farm management ability of these women. The extra income earned from using the improved inputs could be used to improve the well-being of these women farmers.

6. Sociocultural Research

A continuous research program to identify social and cultural constraints in the use of improved seeds and fertilizer would ensure the success of the privatized seeds and fertilizer industries.

7. Training

Farmers and private-sector seed and fertilizer business people will develop a business attitude to farming and farm support services. These farmers and farm support service providers will improve their business acumen in other agro-business areas, e.g., marketing and agro-processing.

The privatization project will have desirable effects, and will reduce inequalities in rural areas. The project is socially sound and environmentally safe.

E. Sustainability Analysis

The chances of sustaining the institutional capacity developed under the project after the end of the project are very high for several reasons. First, during the 4-year period, the project would have trained importers, retailers, farmers, and extension workers. These people will constitute a "critical" mass who would be self-interested in continuing the privatization process and in generating multiplier effects. Second, the project staff would work in close collaboration with national counterparts from the Ministry of Agriculture and other institutions. Such collaboration would generate local expertise in the areas of marketing, economics, credit, training, seed technology and processing, and policy analysis. These experts will continue the momentum generated by the project. Third, the project would involve no physical construction activity, hence, there would be no need of funding for repair and maintenance. Lack of such funding has made many projects unsustainable in the past. Fourth, there is a strong support from the Ministry of Agriculture for the initiatives implemented under this project. All indications suggest that such support would continue in the future as well. It is this support from the GOG and policymakers that would sustain the project initiatives. Finally, the basic policy decision to privatize the

operations in seed and fertilizer subsectors is already in place. Hence, the chances of policy reversals are slim, at least under the present political regime.

F. Technical Analysis

The SFPP is designed to support privatization of the seed and fertilizer business in Ghana by providing technical support for essential components that are necessary for a successful operation. Implementation of the technical inputs in the project will have two dimensions: First the technical functions provided will enhance the private sector's ability to carry out their business operations. Second, the technical assistance provided the public sector in phasing out of the seed and fertilizer business will impact the government in three ways: (1) technical resources will be freed up for other activities, (2) business management practices that will be established can be adopted for future activities, and (3) the privatized seed and fertilizer industries can serve as an example of government commitment and can provide a dialogue for potential investors in agriculture. The logical framework for the project is shown in Appendix VII.

1. Scope of Project Activities

The scope of the activities to be supported under the project is broad and includes every aspect of the functions to be carried out by private businesses and the government. The technical assistance to be provided to the private sector is:

- (a) Selection and development of private seed and fertilizer businesses.
- (b) Developing and acquiring product supplies.
- (c) Pricing of products and services.
- (d) Distribution of products to retailers and farmers.
- (e) Promotion of products.
- (f) Accessing financial systems.
- (g) Transferring business principles and activities, e.g., accounting, inventory control, etc.
- (h) Training of seed and fertilizer industry personnel by functions.
- (i) Facilitation of linkages between the lending institutions and the seed producers and retailers.

Technical assistance to be provided to the public sector is:

- (a) Procedure for selling off existing stocks of products.
- (b) Means and encouragement for transferring fertilizer stocks and/or the use of the warehouse facilities to private organizations.
- (c) Expedite the selloff of existing GSC seed equipment and facilities to the private sector.

- (d) The production of breeder and foundation seed.
- (e) Establishment of quality control procedures.
- (f) Pricing of breeder and foundation seed.
- (g) Training of staff in extension, quality control, seed production, and data collection and use.
- (h) The establishment and operation of an SFIU.
- (i) Mass media promotion of using improved seed fertilizer and farming for a profit.
- (j) Initiate surveys on input use and credit availability.
- (k) The development of a policy framework that is conducive to private-sector participation in the seed and fertilizer industries and the competitive marketplace.

Institutional linkages will be an important technical input. Institutions and organizations that impact on the use of seed and fertilizers will be cultivated to assist the project with complementary activities. The institutional linkages and infrastructure built in the seed and fertilizer industries will assure continued operational success when the project has terminated and the advisers have departed.

2. Technical Factors Influencing Project Output

The most important technical element in achieving the objectives of the project will be the quality of expatriates and national advisers selected to carry out the project. USAID will play an important role in continuing policy dialogues with the MOA during the implementation of the project, however, the bulk of responsibility for developing a privatized seed and fertilizer business will rest with the USAID-sponsored SFPP.

The PAT will be dealing with high-level GOG officials and private businessmen in Ghana. The PAT (both expatriate and national) will bring to their task proven track records of having successfully built a viable seed or fertilizer business. They will respond to specific problems and when necessary will be backstopped with home office assistance. They will establish standards, guidelines, and leadership for work in the seed and fertilizer industries. The short-term consultants will be selected for specific assignments based on their individual experience, knowledge, and leadership.

IFDC has been instrumental in planning and transferring the fertilizer business from the public to the private sector in Bangladesh, Kenya, Cameroon, and Zambia. In some other countries, different components of their marketing systems have been privatized as a step toward total privatization. IFDC recognizes that a package of practices is required for both the farmer and the marketing system to have viable operations. First, the farmer must have a package of practices that includes seed, fertilizers, plant protection chemicals and

equipment, working capital, technology, and a structured market to sell his crop produce. In privatizing a fertilizer marketing system, IFDC considers a system that will supply the complete package of inputs. One input does not have a priority basis. Second, a marketing system cannot normally be viable with fertilizers alone. A system, and especially the retailer, must have a complementary line of products for a profitable operation. In privatizing a marketing system, IFDC pays attention to making the essential crop production inputs available to the marketing system that serves the farmer. IFDC has a multidisciplinary staff of professionals to provide unbiased marketing operational procedures for all inputs. In the event that a specialist is needed for developing supplies of inputs, training, or any activity, the services of a highly qualified specialist will be acquired.

The PAT will assist with the design and formation of an autonomous SFIU. The SFIU will collect and process data from which policy and business decisions can be made. The PAT will provide technical guidance to the SFIU in staffing and defining operational guidelines for collecting, analyzing and disseminating relevant data and information to the private and public sectors.

Training will be an integral component of all technical assistance activities. Special emphasis will be devoted to the selection of personnel for training as well as the venues and course materials to be covered. At the end of the project the infrastructure for a continuing and successful privatized seed and fertilizer industry must not only be in place but operational. The development of technical skills through training to manage the seed and fertilizer industries are identified in the project. A total of 425 retailers will be put through a basic retail marketing course during the 4-year period. All new retailers will complete a basic retail training course. Each retailer, upon completing the basic course, will be expected to complete a refresher course annually. At the end of the 4-year period 600 retailers will have completed the retailer refresher course. A total of 115 senior-type managers will complete a course on different aspects of marketing management. A total of 90 seed production staff will complete courses on different aspects of seed production. A total of 280 staff will complete courses in agricultural credit; the credit courses will involve only a 1-day course for retailers. The first year (1992) 160 extension officers will be trained in a 3-day basic course on seed and fertilizer technology. Also in year 1 (1992), a 2-week training course for 15 bank executives will be carried out in the United States. During the second year (1993) an additional 160 extension officers will be given a basic course in seed and fertilizer technology. Refresher courses for 600 extension officers will be carried out during year 2-1993, year 3-1994, and year 4-1995. During that period it is anticipated that 80 new extension officers will complete the first course on seed and fertilizer technology. A summary of training by categories is shown in Table XI-7.

Table XI-7. Staff Trained by Categories During the Project

Course	Number of Courses	Number of Participants	Duration (Days)
1. Retailers Basic Course	17	425	3
2. Retailer Refresher Course	14	600	1
3. Agrobusiness and Marketing Management Course	16	141	3-90 ^a
4. Seed Production Course	8	90	2-90 ^b
5. Retailer Credit Course	14	280	1
6. Extension Seed and Fertilizer Technology Courses	23 ^c	1,000	1-5 ^d
7. Data Collection, Analysis, and Use Course	2	4	21 ^e
8. Fertilizer Recommendation	2	6	21 ^e
9. Executive Bankers Program	1	15	14

a. Length varies from 3 days in-country training to 90 days management training course in United States.

b. Length varies from 2-day workshops in-country to 90 days short course in United States.

c. Basic courses (11) and refresher courses (12).

d. Basic course 1-3 days and refresher course 1 day.

e. International training in the United States, Togo, and other selected countries.

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APPENDIX I

Ghana Seed and Fertilizer Privatization Team, Terms of Reference, and Organizations and People Contacted

A. Study Team Members

1. Lewis B. Williams - Marketing Specialist, Team Leader
2. John W. Harding - Seed Industry Specialist
3. Claude C. Freeman - Agricultural Credit Specialist
4. John H. Allgood - Training Specialist
5. Balu L. Bumb - Policy Economist
6. Edward O. Asante - Agricultural Economist
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B. Project Rationale and Scope of Work

Food Crop Production

Sustained increases in food crop production in Ghana can only be achieved through increased productivity in the traditional small-scale farm sector. There is demonstrable evidence that sufficient technology exists to allow farmers to profitably double food crop yields utilizing appropriate seed, fertilizer, and crop management practices in Ghana. This evidence in itself is insufficient to encourage small-scale farmers to adopt these practices. Lack of knowledge, financial resources or credit to purchase inputs, risk aversion, inadequate crop marketing facilities, and most importantly conflicting government policy signals, all limit the adoption of improved crop production practices. Add to these forces, inadequacies in input delivery systems, particularly improved seeds and fertilizers, and rapid changes in financial/economic policies and there is a recipe for confusion and stagnation in crop production. This situation is in urgent need of correction if the structural reform measures already taken by the Government of Ghana (GOG) are to be capitalized on. This proposal addresses these needs.

Free Market Rationale and the Private Sector

A free market is defined as one in which there is freedom of operation and equity by all parties constrained only by such regulatory control as is necessary to protect consumer and national interests. This implies a legitimate role for the public and private sectors.

Freedom of operation incorporates free entry and exit, freedom to operate in any market, free pricing and free choice by consumers. The essential element is competition which creates the necessary customer-oriented service and eliminates collusive action by suppliers. Competition also ensures that the suppliers, distributors, wholesalers, and retailers reach profit objectives only through sustained market development and increased sales. Controlled markets create conditions where induced shortages of supply can be beneficial to the marketing institutions but costly to farmers and the national economy.

The implementation of a free, open, and competitive market for agricultural technology is a transition process of policy reform that ideally should be taken one step at a time rationally linked to constraint removal. The ultimate goal is the removal of constraints, which preclude farmers from adopting improved technology, by institutionalizing a free, open, and competitive market for farm inputs and outputs.

Privatization is already underway in Ghana, but because some of the same roadblocks have been encountered, progress has been very limited. The privatization process of both the fertilizer and seed sectors in Ghana will require a coordinated program of assistance, the strong support of the GOG, and a continuing dialogue with the major donor agencies.

Objectives

The objectives of the project are to:

1. Increase food production, particularly by the small-scale farmer with the expanded use of fertilizer and improved seeds and other recommended management practices.
2. Improve the efficiency of the fertilizer and seed sector and minimize their cost to the GOG.
3. Develop a free and competitive private fertilizer and seed industry capable of effectively supplying fertilizer and seeds to the farmers of Ghana.
4. Initiate a seed program that addresses all aspects of the seed industry, including legislation, research, production, certification, marketing, extension, training, and quality control.
5. Ensure the availability of the proper fertilizers and improved seeds throughout Ghana at the time they are needed at a reasonable price.
6. Develop the capabilities of the Ghana people to handle all aspects of the fertilizer and seed sector by the termination of the project.

Scope of Work

Project Design

- I. Data Collection From Public and Private Sectors**
 1. Meet with representatives of all facets of the fertilizer and seed industry to become familiar with the current organizational, technical, and operational situation.
 2. Meet with GOG officials to become familiar with current policies for agriculture, input supply and crop marketing, and development programs.
 3. Become familiar with fertilizer and seed programs of all donors for their involvement in the implementation stage of the project.
- II. An Assessment of Government Policies Related to Agriculture**
 1. Determine availability of information to policymakers.
 2. Describe problems associated with the decline of the seed industry.
- III. The Fertilizer and Seed Markets in Ghana**
 1. An overview of crop and marketing systems.
 2. An overview of the fertilizer market and marketing system.
 3. An overview of the seed industry and marketing system.
 4. Institutional linkages.
- IV. Major Deficiencies in the Current Policy Environment**
 1. An assessment of the policy environment relative to agriculture (including fertilizer and seed) sector performance.
 - a. Major deficiencies.
 - b. Major constraints to improved performance.
- V. Major Deficiencies in the Current System for Fertilizer and Seed Marketing (including human resource development needs, donor linkages, etc.)**
- VI. An Action Plan for the Privatization of the Fertilizer and Seed Sectors in Ghana**
 1. The privatization concept.
 2. Government policies.
 3. Institutional development and linkages.
 4. Strategy for privatization.
 5. Budget.

C. People and Organizations Contacted by the Study Team

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Mr. Augustine Voradom
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APPENDIX II

Fertilizer Depots Managed by MOA

1. **Ashanti Region (12 Depots)**
 - Nkawie
 - Agona
 - Ejura
 - Kumasi
 - Obuasi
 - Mampong
 - Ejisu
 - Offinso
 - Akomadan
 - Tepa
 - Bekwai
2. **Central Region (9 Depots)**
 - Cape Coast
 - Mfantsiman
 - Assin Foso
 - Breman Asikuma
 - Elmina
 - Upper Denkyira
 - Twifo Praso
 - Ajumako
 - Abura Dunkwa
3. **Eastern Region (10 Depots)**
 - Koforidua
 - Akim New Tafo
 - Donkorkrom
 - Yilo Krobo (Somanya)
 - Manya Krobo (Odumasi)
 - Mpraeso
 - Asamankese
 - Kukurantumi
 - Akim Oda
 - Akropong
4. **Brong Ahafo Region (9 Depots)**
 - Sunyani*
 - Wenchi*
 - Kintampo*
 - Nkoranza*
 - Atebubu*
 - Dormaa Ahenkro
 - Goaso
 - Berekum
 - Techiman*
5. **Greater Accra Region (4 Depots)**
 - Accra Reg. Office
 - Dangbe West (Dodowa)
 - Dangbe East (Ada Foah)
 - Ga District (Pokuase)
6. **Western Region (9 Depots)**
 - Sekondi
 - Agona Junction
 - Half Assini
 - Enchi
 - Bibiani
 - Sefwi Wiawso
 - Tarkwa
 - Asankrangwa
 - Mpohor

7. Northern Region (8 Depots)

- Bimbilla*
- Saboba
- Walewale²
- Bole*
- Damongo*
- Yendi*
- Tolon*
- Zabzugu*
- Tamale*

8. National Depots (3 Depots)

- Tema
- Swedru
- Tamale

***Handed over to FASCOM (UR)**

APPENDIX III

In case of reply the number and date of this letter should be quoted.

Telephone: 665421
Telex: 2583 MINAG GH.

My Ref. No. *M/A. 22-11*

Your Ref. No.....



REPUBLIC OF GHANA

M.A. Form 7

MINISTRY OF AGRICULTURE

P.O. BOX M. 37

ACCRA

.....18..February.....19...91..

FERTILIZER DISCOUNT RATES FOR 1991

In fixing discount rates for fertilizer purchases by retailers/wholesalers for the 1990 cropping season, certain factors which should have been considered were inadvertently left out.

2. After careful consideration and to reflect the realities of operations on the ground it has been decided to increase the discount rates as follows:-

- a) For dealers buying from the district and regional depots the following discount rates shall apply:-

Discount Rate

- i) Purchase of minimum of 20 bags - C400 per bag of 50kg.
- ii) Purchase of minimum of 100 bags - 450 " " " "
- iii) Purchase of minimum of 300 bags - 500 " " " "
- iv) Purchase of minimum of 500 bags - 600 " " " "
- v) Purchase of 2000 bags and above - 800 " " " "

- b) For wholesalers buying from the National depots using their own means of transport, the following discount rates shall apply:-

- i) For wholesalers in the Greater Accra, Eastern and Volta Regions.

Purchase of minimum of 500 bags - C700 per bag of 50kg

Purchase of 2.000 bags and above - 900 " " " "

- ii) For wholesalers in the Ashanti, Brong Ahafo, Central, Western, Northern and Upper regions:

Discount Rate

Purchase of minimum of 500 bags -C 850 per bag of 50kg

Purchase of 2.000 bags and above 1.050 " " " "

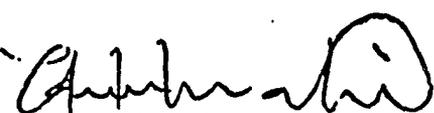
- iii) For wholesalers in the Northern and Upper Regions collecting from the National Depot at Tema:-

Purchase of minimum of 500 bags -C 900 per bag of 50kg

Purchase of minimum of 2.000 bags and above - " " " "

3. It would be appreciated if you would inform all ^{place} storekeepers in the region about the change which takes with immediate effect.

4. Your personal involvement in this exercise will be most welcome.


f: PNDC SECRETARY FOR AGRICULTURE
(IBRAHIM I. ADAM)
PNDC DEPUTY SECRETARY FOR AGRIC (CROPS)

ALL REGIONAL DEPUTY SECRETARIES
FOR AGRICULTURE.

cc/ The Director
Crop Services Department.
Accra.

Chief Internal Auditor. W
Ministry of Agriculture.
Accra.

All Regional Directors of
Agriculture.

The Managing Director,
FASCOM (VR)

The Managing Director
FASCOM (UWR).
Bolgatanga.

APPENDIX IV

Estimated Cost Structure and Break-Even Analysis for the Volta Region FASCOM in 1990

Item	Amount (α)
Revenue:	
Sale of fertilizer ^a	210,000,000
Sale of other agricultural supplies	90,000,000
Other income	<u>24,000,000</u>
Total income	324,000,000
Fixed cost:	
Rent	400,000
Salaries	65,000,000
Utilities	1,300,000
Interest ^b	97,500,000
Depreciation (vehicles)	15,000,000
Other	<u>112,219,000</u>
Subtotal fixed costs	291,419,000
Variable cost:	
Fertilizer	150,000,000
Other	30,000,000
Subtotal variable costs	180,000,000
Total cost	471,419,000
Net Profit (Loss)	(147,419,000)
Break-even analysis:	
Variable cost per ton	72,000
Contribution to fixed cost and profit per ton	12,000
Break-even sales (tons)	24,285
Actual sales (tons)	2,500
Actual sales as % of break-even sales	10.3

a. 2,500 mt at an average price of α84,000/ton.

b. Inventory cost at 5,000 tons and interest at 26%. Fertilizer inventory value estimated at α60,000/ton; 80% of total debt is due to fertilizer inventory.

Source: IFDC estimates based upon the 1988/89 FASCOM financial statements and sales estimates for 1990.

APPENDIX V

Government Announcements Relative to Fertilizer Industry Privatization

August 5, 1988 and April 15, 1989

MINISTRY OF AGRICULTURE

PRIVATISATION OF FERTILIZER — RETAILING

1. The Ministry of Agriculture intends to appoint private retailers in the Volta and Brong Ahafo Regions to sell fertilizers.

2. Applicants must be established retailers or organised farmers' groups with a place or places of business in rural areas, conveniently located to take delivery of fertilizers from selected fertilizer depots in the Regions and sell direct to farmers. Interested retailers will be provided technical guidance by the staff of the Crop Services Department of the Ministry of Agriculture.

3. Applicants must have adequate leakage-free, well-ventilated storage facilities and sufficient capital to purchase minimum quantities of fertilizers with bank drafts or cash and pay for transport to their retail shops, and where necessary, to the farm gates.

4. Retailers will purchase at Ministry's predetermined prices from the fertilizers depots and will be allowed to sell up to a maximum retail prices depending on the distances from the fertilizer depots to their retail shops.

5. Those interested should apply in writing to:
The Regional Deputy Secretary for Agriculture
Ministry of Agriculture
Sunyani, Brong Ahafo Region

The Managing Director,
Farmers Services Company Ltd.,
P.O. Box 478,
Ho, Volta Region.

who are to forward them to:
The Director of Crop Services
Ministry of Agriculture,
P.O. Box M.37,
Accra.

indicating:

- i) Name and title or Name of Firm or Organisation
- ii) Address of place or places of business
- iii) Locations of retail shop(s) with dimensions and descriptions
- iv) Distances of retail shop(s) to nearest fertilizer depots
- v) Name of Bankers
- vi) Present Business.

Letters of application must be forwarded to the above addresses by 15th August, 1988 at the latest.

7. Applicants who intend in due course to undertake wholesaling of fertilizers in addition to retailing should indicate as such in their applications.

MINISTRY OF AGRICULTURE

PRIVATISATION OF FERTILIZER — RETAILING

(1) The Ministry of Agriculture intends to appoint private retailers in the Ashanti, Eastern and Central Regions to sell fertilizers.

(2) Applicants must be established retailers or organised farmer's groups with a place or places of business in rural areas, conveniently located to take delivery of fertilizers from selected fertilizer depots in the regions and sell direct to farmers. Interested retailers will be provided technical guidance by the staff of the Crop Services Department of the Ministry of Agriculture.

(3) Applicants must have adequate leakage-free, well-ventilated storage facilities and sufficient capital to purchase minimum quantities of fertilizers with bank drafts or cash and pay for transport to their retail shops, and where necessary, to the farm gates.

(4) Retailers will purchase at the Ministry's pre-determined prices and will be allowed to sell up to maximum retail prices depending on the distances from the fertilizer depots to their shops.

(5) Those interested should apply in writing to their local District Crop Services Officer who will forward through his Regional Crop Services Officer and PNDC Deputy Secretary for Agriculture to:

The Director of Crop Services Department,
Ministry of Agriculture,
P.O. Box M.37,
Accra.

indicating.

- (i) Name and title or name of firm or organisation
- (ii) Address and place or places of business
- (iii) Locations of retail shop(s) with dimensions and descriptions
- (iv) Distances of retail shop(s) to nearest fertilizer depots.
- (v) Name of bankers
- (vi) Present business

(6) Letters of application should be submitted by 15th April, 1989 at the latest.

(7) Applicants who intend in due course to undertake wholesaling of fertilizers, in addition to retailing, should

COST CLASSIFICATION	YEAR 1			YEAR 2			YEAR 3			YEAR 4			PROJECT TOTAL		
	US\$	CEDIS (a)	TOTAL	US\$	CEDIS (a)	TOTAL									
I. RESIDENT CNSLT RELATED COSTS															
A. Base Salaries															
1. Seed and Fertilizer Marketing Spec	75,000		75,000	82,500		82,500	90,750		90,750	99,825		99,825	348,075	0	348,075
2. Marketing Economist Specialist	58,333		58,333	77,000		77,000	84,700		84,700	93,170		93,170	313,203	0	313,203
3. Seed Industry Specialist	58,333		58,333	77,000		77,000	84,700		84,700	77,642		77,642	297,675	0	297,675
4. Credit Specialist	58,333		58,333	77,000		77,000	84,700		84,700	23,292		23,292	243,326	0	243,326
Subtotal (L.A)	250,000	0	250,000	313,500	0	313,500	344,850	0	344,850	293,929	0	293,929	1,202,279	0	1,202,279
B. Post Differential @ 25% + \$120/mo COLA															
1. Seed and Fertilizer Marketing Spec	20,190		20,190	22,065		22,065	24,128		24,128	26,396		26,396	92,779	0	92,779
2. Marketing Economist Specialist	15,783		15,783	20,690		20,690	22,615		22,615	24,733		24,733	83,821	0	83,821
3. Seed Industry Specialist	15,783		15,783	20,690		20,690	22,615		22,615	20,610		20,610	79,699	0	79,699
4. Credit Specialist	15,783		15,783	20,690		20,690	22,615		22,615	6,183		6,183	65,271	0	65,271
Subtotal (L.B)	67,540	0	67,540	84,135	0	84,135	91,973	0	91,973	77,922	0	77,922	321,570	0	321,570
C. Fringe Benefits @ 30%															
1. Seed and Fertilizer Marketing Spec	22,500		22,500	24,750		24,750	27,225		27,225	29,948		29,948	104,423	0	104,423
2. Marketing Economist Specialist	17,500		17,500	23,100		23,100	25,410		25,410	27,951		27,951	93,961	0	93,961
3. Seed Industry Specialist	17,500		17,500	23,100		23,100	25,410		25,410	23,292		23,292	89,302	0	89,302
4. Credit Specialist	17,500		17,500	23,100		23,100	25,410		25,410	6,988		6,988	72,998	0	72,998
Subtotal (L.C)	75,000	0	75,000	94,050	0	94,050	103,455	0	103,455	88,179	0	88,179	360,684	0	360,684
D. Staff Allowances and Other Costs															
1. Housing & Util - (4)x \$30,000 ea)		120,000	120,000		132,000	132,000		145,200	145,200		159,720	159,720	0	556,920	556,920
2. Guard Allowance		3,840	3,840		4,224	4,224		4,646	4,646		5,111	5,111	0	17,821	17,821
3. Maint & Inc (4) x \$5,000 yr 1		20,000	20,000		12,000	12,000		13,200	13,200		14,520	14,520	0	59,720	59,720
4. Appliance allowance (4) x \$7,500 ea	30,000		30,000			0			0			0	30,000	0	30,000
5. Education allow. & travel (3)	46,450		46,450	51,095		51,095	56,205		56,205	61,825		61,825	215,574	0	215,574
6. Home leave/R & R		34,000	34,000		37,400	37,400		41,140	41,140			0	0	112,540	112,540
7. Storage of HHE (\$2500 per family)	10,000		10,000	11,000		11,000	12,100		12,100	13,310		13,310	46,410	0	46,410
8. Shipment of HHE (\$25000 per family)	100,000		100,000			0			0	100,000		100,000	100,000	100,000	200,000
9. Shipment of vehicles (4) x \$5,000	20,000		20,000			0			0	24,000		24,000	20,000	24,000	44,000
10. Shipment of consumables (4) x \$2,500	10,000		10,000			0			0			0	10,000	0	10,000
11. IIE Admin. fee	6,000		6,000	6,600		6,600	7,260		7,260	7,986		7,986	27,846	0	27,846
12. DBA and Medical Evac. ins	11,960		11,960	14,144		14,144	15,223		15,223	13,471		13,471	54,798	0	54,798
Travel Costs to Accra															
1. Predep. Lodging (4 x 10 X \$125/day)	5,000		5,000			0			0	6,000		6,000	5,000	6,000	11,000
2. Medical Exams and Visas	5,000		5,000	2,400		2,400	2,640		2,640	6,500		6,500	16,540	0	16,540
3. TLA In-Country (4 x 30 x \$150/day)	18,000		18,000			0			0	24,000		24,000	42,000	0	42,000
4. Enroute expenses 4 @ \$175	700		700			0			0	800		800	1,500	0	1,500
5. Airfare (12 @ \$2,000)	24,000		24,000			0			0	31,200		31,200	24,000	31,200	55,200
6. Airfreight of personal effects 4 x (650 lbs. @ \$3.50/lb)	9,100		9,100			0			0	3,250		3,250	12,350	0	12,350
Subtotal (L.D)	296,210	177,840	474,050	85,239	185,624	270,863	93,427	204,186	297,614	131,142	340,551	471,693	606,019	908,201	1,514,220
TOTAL RESIDENT CNSLT COSTS (I)	688,750	177,840	866,590	576,924	185,624	762,548	633,705	204,186	837,891	591,172	340,551	931,723	2,490,551	908,201	3,398,753

APPENDIX VI. Proposed Budget "Privatization of the Seed and Fertilizer Industries in Ghana" -- Expressed in U.S. Dollars

COST CLASSIFICATION	YEAR 1			YEAR 2			YEAR 3			YEAR 4			PROJECT TOTAL		
	US\$	CEDIS (a)	TOTAL	US\$	CEDIS (a)	TOTAL	US\$	CEDIS (a)	TOTAL	US\$	CEDIS (a)	TOTAL	US\$	CEDIS (a)	TOTAL
II. SHORT TERM EXPATRIATE CNSLT RELATED COSTS															
A. Salary and Benefits															
1. Agronomy Expert	6,600		6,600	7,260		7,260			0		0		13,860	0	13,860
2. Policy Expert	6,600		6,600	14,520		14,520	7,920		7,920		0		29,040	0	29,040
3. Seed Production Expert	6,600		6,600			0	7,920		7,920		0		14,520	0	14,520
4. Seed Engineer Expert			0	21,780		21,780			0	17,160		17,160	38,940	0	38,940
5. Seed Training Expert	6,600		6,600	7,260		7,260	7,920		7,920	8,580		8,580	30,360	0	30,360
6. Credit Expert	13,200		13,200			0	7,920		7,920	25,740		25,740	46,860	0	46,860
7. Information & Communication Expert			0	7,260		7,260			0	8,580		8,580	15,840	0	15,840
Subtotal (II.A)	39,600	0	39,600	58,080	0	58,080	31,680	0	31,680	60,060	0	60,060	189,420	0	189,420
B. Travel															
1. Intern'l Airfare - RT @ \$3,800	19,000		19,000	25,080		25,080	18,240		18,240	19,760		19,760	82,080	0	82,080
2. In-Country Travel		10,000	10,000		11,000	11,000		12,000	12,000		13,000	13,000	0	46,000	46,000
3. Per Diem - @ \$121/day	16,940		16,940	26,620		26,620	14,520		14,520	28,314		28,314	86,394	0	86,394
4. Per Diem - @ \$70/day	2,800		2,800	3,080		3,080	1,680		1,680	2,730		2,730	10,290	0	10,290
5. Pre travel & enroute exp @\$500	2,500		2,500	2,750		2,750	3,025		3,025	2,500		2,500	10,775	0	10,775
C. Other Direct Costs	5,000		5,000	4,000	2,000	6,000	4,400		4,400	5,000		5,000	18,400	2,000	20,400
Subtotal (II.B-C)	46,240	10,000	56,240	61,530	13,000	74,530	41,865	12,000	53,865	58,304	13,000	71,304	207,939	48,000	255,939
TOTAL SHORT TERM EXP CNSLT (II)	85,840	10,000	95,840	119,610	13,000	132,610	73,545	12,000	85,545	118,364	13,000	131,364	397,359	48,000	445,359
III. NAT'L CNSLT RELATED COSTS:															
A. Long Term Consultants:															
1. Salaries and Benefits															
a. Marketing Specialist		4,000	4,000		8,800	8,800		9,600	9,600		10,400	10,400	0	32,800	32,800
b. Data Collection Spec		1,500	1,500		6,600	6,600		7,200	7,200		7,800	7,800	0	23,100	23,100
c. Data Analysis Spec			0		3,300	3,300		7,200	7,200		7,800	7,800	0	18,300	18,300
d. Seed Production		2,000	2,000		8,800	8,800		9,600	9,600			0	0	20,400	20,400
e. Seed Equipment Spec		2,000	2,000		8,800	8,800		4,800	4,800			0	0	15,600	15,600
f. Rural Credit Spec		4,000	4,000		8,800	8,800		9,600	9,600		10,400	10,400	0	32,800	32,800
Subtotal (III.A)	0	13,500	13,500	0	45,100	45,100	0	48,000	48,000	0	36,400	36,400	0	143,001	143,001
B. Short Term Consultant:															
1. Salaries and Benefits															
a. Training/Adm Expert		2,250	2,250		4,950	4,950		2,700	2,700		2,925	2,925	0	12,825	12,825
b. Fert Marketing Expert		1,500	1,500		1,650	1,650		900	900		975	975	0	5,025	5,025
c. Seed Expert			0		2,475	2,475		2,700	2,700			0	0	5,175	5,175
d. Computer Expert		750	750		1,650	1,650		1,800	1,800		975	975	0	5,175	5,175
e. Credit Expert		750	750		825	825		900	900		975	975	0	3,450	3,450
f. SFIU Data Analysis Expert			0		1,650	1,650		900	900			0	0	2,550	2,550
Subtotal (III.B)	0	5,250	5,250	0	13,200	13,200	0	9,900	9,900	0	5,850	5,850	0	34,200	34,200
TOTAL NAT'L CNSLT RELATED COSTS (III)	0	18,750	18,750	0	58,300	58,300	0	57,900	57,900	0	42,250	42,250	0	177,201	177,201

COST CLASSIFICATION	YEAR 1			YEAR 2			YEAR 3			YEAR 4			PROJECT TOTAL		
	US\$	CEDIS (a)	TOTAL	US\$	CEDIS (a)	TOTAL									
IV. TRAINING RELATED COSTS:															
A. Local Training Costs															
1. IFDC Staff Travel		14,750	14,750		25,680	25,680		23,410	23,410		16,955	16,955	0	80,795	80,795
2. Participant Allowances		71,400	71,400		111,960	111,960		99,070	99,070		59,490	59,490	0	341,920	341,920
3. University Honorariums		500	500		500	500		500	500		500	500	0	2,000	2,000
4. Training (Meeting rooms, supplies, etc...)		16,900	16,900		32,640	32,640		30,140	30,140		22,170	22,170	0	101,850	101,850
Subtotal (IV.A)	0	103,550	103,550	0	170,780	170,780	0	153,120	153,120	0	99,115	99,115	0	526,565	526,565
B. International Training Costs															
1. Participant Travel	79,200		79,200	165,760		165,760	114,460		114,460	123,955		123,955	483,375	0	483,375
2. Program Fees	18,500		18,500	31,075		31,075	24,825		24,825	21,900		21,900	96,300	0	96,300
Subtotal (IV.B)	97,700	0	97,700	196,835	0	196,835	139,285	0	139,285	145,855	0	145,855	579,675	0	579,675
C. Agro-Credit Training Program	150,000		150,000			0			0			0	150,000	0	150,000
TOTAL TRAINING RELATED COSTS (IV)	247,700	103,550	351,250	196,835	170,780	367,615	139,285	153,120	292,405	145,855	99,115	244,970	729,675	526,565	1,256,240
V. IN-COUNTRY OFFICE SUPPORT															
A. Salaries and Benefits															
1. Bookkeeper (1)		5,000	5,000		5,500	5,500		6,000	6,000		6,500	6,500	0	23,000	23,000
2. Clerk (2)		7,200	7,200		7,920	7,920		8,640	8,640		9,360	9,360	0	33,120	33,120
3. Secretaries (5)		14,400	14,400		19,800	19,800		21,600	21,600		16,380	16,380	0	72,180	72,180
4. Drivers (5)		3,200	3,200		4,400	4,400		4,800	4,800		3,467	3,467	0	15,867	15,867
5. Guards (4)		1,000	1,000		1,100	1,100		1,200	1,200		1,300	1,300	0	4,599	4,599
Subtotal (V.A)	0	30,800	30,800	0	38,720	38,720	0	42,240	42,240	0	37,007	37,007	0	148,767	148,767
B. Travel															
1. International	3,000	7,000	10,000	3,300	7,700	11,000	3,630	8,470	12,100	3,993	9,317	13,310	13,923	32,487	46,410
2. Local	15,000	15,000	30,000	16,500	16,500	33,000	18,150	18,150	36,300	19,965	19,965	39,930	69,615	69,615	139,230
Subtotal (V.B)	18,000	22,000	40,000	19,800	24,200	44,000	21,780	26,620	48,400	23,958	29,282	53,240	83,538	102,102	185,640
C. Office Operations															
1. Rent		30,000	30,000		33,000	33,000		36,300	36,300		39,930	39,930	0	139,230	139,230
2. Utilities		9,000	9,000		9,900	9,900		10,890	10,890		11,979	11,979	0	41,769	41,769
3. Office Supplies	9,000	9,000	18,000	9,900	9,900	19,800	10,890	10,890	21,780	11,979	11,979	23,958	41,769	41,769	83,538
4. Vehicle Operations		36,000	36,000		39,600	39,600		43,560	43,560		47,916	47,916	0	167,076	167,076
5. Maintenance equip. & supplies		5,000	5,000		5,000	5,000		5,000	5,000		5,000	5,000	0	20,000	20,000
6. Insurance (vehicle & prop.)		15,000	15,000	0		0	0		0	0		0	0	15,000	15,000
7. Office modifications (security, etc.)		5,000	5,000		1,000	1,000		1,000	1,000		1,000	1,000	0	8,000	8,000
8. Comm (Tele, Telex, Postage & Freight)	10,000	15,000	25,000	11,000	16,500	27,500	12,100	18,150	30,250	13,310	19,965	33,275	46,410	69,615	116,025
Subtotal (V.C)	19,000	124,000	143,000	20,900	114,900	135,800	22,990	125,790	148,780	25,289	137,769	163,058	88,179	502,459	590,638

1. Desks (10)	1,500	1,500	0	0	0	0	0	0	0	0	0	1,500	1,500
2. Filing cabinets (16)	2,500	2,500	0	0	0	0	0	0	0	0	0	2,500	2,500
3. Conference table (1)	1,000	1,000	0	0	0	0	0	0	0	0	0	1,000	1,000
4. Bookshelves (10)	1,000	1,000	0	0	0	0	0	0	0	0	0	1,000	1,000
5. Desk lamps (10)	750	750	0	0	0	0	0	0	0	0	0	750	750
6. End tables (10)	800	800	0	0	0	0	0	0	0	0	0	800	800
7. Chairs-conference (15)	1,500	1,500	0	0	0	0	0	0	0	0	0	1,500	1,500
8. Desk type (10)	1,500	1,500	0	0	0	0	0	0	0	0	0	1,500	1,500
9. Typewriters (2)	800	800	0	0	0	0	0	0	0	0	800	0	800
10. Desktop computers & Accas. (7)	20,000	20,000	0	0	0	0	0	0	0	0	20,000	0	20,000
11. Computer desks (7)	2,100	2,100	0	0	0	0	0	0	0	0	2,100	0	2,100
12. Software	2,500	2,500	0	0	0	0	0	0	0	0	2,500	0	2,500
13. Printers (5) ,and perifiels	7,500	7,500	0	0	0	0	0	0	0	0	7,500	0	7,500
14. Ceiling fans (10)	1,500	1,500	0	0	0	0	0	0	0	0	0	1,500	1,500
15. Generators (1)	20,000	20,000	0	0	0	0	0	0	0	0	20,000	0	20,000
16. Water filters (3)	300	300	0	0	0	0	0	0	0	0	300	0	300
17. Refrigerators (3)	5,000	5,000	0	0	0	0	0	0	0	0	5,000	0	5,000
18. Communications equip (telefax, photocopy mach.,telephone,etc)	15,000	0	0	0	0	0	0	0	0	0	0	0	0
19. Overhead screen,projector ,etc.	4,000	15,000	0	0	0	0	0	0	0	0	15,000	0	15,000
20. Air Conditioners (4)	5,000	4,000	0	0	0	0	0	0	0	0	4,000	0	4,000
Subtotal (V.D)	77,200	5,000	94,250	0	0	0	0	0	0	0	0	0	0
E. Equipment and Vehicles													
1. Vehicles (4x \$25,000)	100,000	100,000	0	0	0	0	0	0	0	0	0	100,000	100,000
2. Seed Processing Equipment	39,000	39,000	181,300	181,300	26,000	26,000	0	0	0	0	246,300	0	246,300
3. Pilot Project (Banking)	50,000	50,000	0	0	0	0	0	0	0	0	0	50,000	50,000
Subtotal (V.E)	39,000	150,000	189,000	181,300	0	181,300	26,000	0	26,000	0	0	246,300	150,000
TOTAL OFFICE OPERATIONS IN-COUNTRY (V)	153,200	343,850	497,050	222,000	177,820	399,820	70,770	194,650	265,420	49,247	204,058	253,305	495,217
VI. IFDC HQS RELATED DIRECT COSTS													
A. Project Management													
1. Salaries and Benefits	14,000	14,000	15,400	15,400	16,940	16,940	18,634	18,634	18,634	64,974	0	64,974	64,974
2. Travel	4,000	1,000	5,000	4,400	1,100	5,500	4,840	1,210	6,050	5,324	1,331	6,655	18,564
Subtotal (VLA)	18,000	1,000	19,000	19,800	1,100	20,900	21,780	1,210	22,990	23,958	1,331	25,289	83,538
B. Support													
1. Support Staff	10,000	10,000	11,000	11,000	12,100	12,100	13,310	13,310	13,310	46,410	0	46,410	46,410
2. Communications	5,000	5,000	5,500	5,500	6,050	6,050	6,655	6,655	6,655	23,205	0	23,205	23,205
3. Other Direct Charges	2,500	2,500	2,750	2,750	3,025	3,025	3,328	3,328	3,328	11,603	0	11,603	11,603
Subtotal (VLB)	17,500	0	17,500	19,250	0	19,250	21,175	0	21,175	23,293	0	23,293	81,218
TOTAL IFDC HQS DIRECT COSTS (VI)	35,500	1,000	36,500	39,050	1,100	40,150	42,955	1,210	44,165	47,251	1,331	48,582	164,756

APPENDIX VI. Proposed Budget "Privatization of the Seed and Fertilizer Industries in Ghana" -- Expressed in U.S. Dollars

COST CLASSIFICATION	YEAR 1			YEAR 2			YEAR 3			YEAR 4			PROJECT TOTAL		
	US\$	CEDES [a]	TOTAL	US\$	CEDES [a]	TOTAL									
TOTAL ITEMS I - VI	1,210,990	654,990	1,865,980	1,154,419	606,624	1,761,044	960,260	623,067	1,583,327	951,889	700,305	1,652,194	4,277,558	2,584,986	6,862,544
CONTINGENCY @ 5%	60,549	32,750	93,299	57,721	30,331	88,052	48,013	31,153	79,166	47,594	35,015	82,610	213,878	129,249	343,127
OVERHEAD @ 40% [b]	783,712		783,712	739,638		739,638	664,997		664,997	693,921		693,921	2,882,268		2,882,268
TOTAL BUDGET	2,055,251	687,740	2,742,991	1,951,779	636,955	2,588,734	1,673,270	654,220	2,327,490	1,693,404	735,320	2,428,725	7,373,704	2,714,235	10,087,939

[a] CEDI Value Expressed as US \$ Equivalent.

[b] Overhead on CEDI Expenditure to be Reimbursed in US \$ Currency

APPEN IX VII. Project Design Summary—Logical Framework

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<i>A. Program Goal:</i>	<i>Measures of Goal Achievement:</i>		<i>Assumptions Made for Achieving Goal Targets:</i>
<ol style="list-style-type: none"> 1. To privatize the seed and fertilizer industry 2. To increase national food production at a decreased cost. 	<ol style="list-style-type: none"> 1. Sell off of GOG fertilizer stocks. 2. Leasing or sell off of GOG fertilizer warehouses. 3. Leasing or sell off of GSC seed equipment and facilities. 4. National increase in food production of 4% per annum. 	<ol style="list-style-type: none"> 1. SFIU statistical reports 2. SFIU/PAT surveys of private firms. 3. Independent AID field surveys. 4. GOG crop production survey. 	<ol style="list-style-type: none"> 1. Political stability and continued economic reform. 2. Continued project support by USAID. 3. Financial resources to be made available to the private sector. 4. Enabling GOG policy framework. 5. Favorable condition for crop production.
<i>B. Project Purpose:</i>	<i>Conditions Indicating Purpose Achieved:</i>		<i>Assumption for Achieving Purpose:</i>
<ol style="list-style-type: none"> 1. To promote growth in improved seed and fertilizer sales on an equitable basis. 2. To foster private sector involvement in seed and fertilizer marketing. 	<ol style="list-style-type: none"> 1. Number of organizations entered seed and fertilizer business. 2. Number of contract farmers producing foundation and certified seed. 3. Number of private retailers. 4. Number of farmers using improved seed and fertilizers. 5. Increase in rates of fertilizer use. 6. Increase in crop yields per ha. 	<ol style="list-style-type: none"> 1. SFIU sales survey reports. 2. GOG records on fertilizer and seed retailer registration. 3. NSS surveys of contract farmers. 4. PAT/MOA/SFIU farmer surveys on seed and fertilizer use. 5. GOG statistical reports. 	<ol style="list-style-type: none"> 1. Continued commitment by GOG for privatizing the seed and fertilizer industry. 2. Donor community working in harmony with privatizing process. 3. Banking community making funds available for private sector business operations. 4. Favorable cropping conditions continue. 5. Improved crop/fertilizer price relationships.
<i>C. Outputs:</i>	<i>Magnitude of Output—End of Project:</i>		<i>Assumption for Achieving Outputs:</i>
<ol style="list-style-type: none"> 1. An adequate and timely supply of improved seed and fertilizer at the local level. 2. Adequate private companies and retailers to ensure countrywide coverage of seed and fertilizer supply in a competitive market. 3. Collection analysis and utilization of better data for decisions. 4. Improved credit availability. 5. Private sector managerial skills multiplier effect. 6. Increased nutrient contents of fertilizers. 7. Increase in area fertilized. 8. Savings in foreign exchange. 9. Improved crop produce marketing. 10. Establishment of SFIU. 	<ol style="list-style-type: none"> 1. Seed production staff trained (90). 2. Quality control staff trained (4). 3. Private organization management staff trained (151). 4. Retailers trained (523). 5. Increase in new and improved seed supply (1,500 tons). 6. Fertilizer supply and consumption increased (59,000 tons). 7. Better quality seed in markets. 8. Credit for seed production Year 4 (\$360 million). 9. Credit for fertilizer finance Year 4 (\$5 billion). 10. Seed and fertilizer database. 11. Extension staff retrained 1,000. 12. SFIU annual reports on seed, fertilizer, and credit utilization. 13. Fertilizer nutrient content increases from 33% to 40%. 14. Area fertilized increased by 120,000 ha. 15. Foreign exchange savings of \$40-60 million after the fourth year. 	<ol style="list-style-type: none"> 1. Training course records. 2. SFIU survey on seed and fertilizer consumption by regions and type of farmers. 3. PAT interviews of private companies for retailer established and survey of retailers. 4. Independent review and assessment of quality control facilities, programs, and certified seed. 5. SFIU survey and analysis of credit utilization. 6. MOA crop surveys. 	<ol style="list-style-type: none"> 1. Continued support by USAID. 2. Continued cooperation by GOG. 3. Continued complementary support from the donor community. 4. Continued profitability of seed production, retailing of fertilizers, and crop production. 5. Continued favorable crop production factors. 6. Continued availability of credit to the privatized system and farmers. 7. Continued favorable crop output/input price relationship.

(Continued)

APPENDIX VII. Project Design Summary—Logical Framework (Continued)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p><i>D. Project Inputs:</i></p> <ol style="list-style-type: none"> 1. GOG approves the SFPP. 2. USAID approves and finances the SFPP. 3. PAT provides advice and training for the SFPP. 4. Seed equipment in place and operational during year 1–1992. 	<p><i>Implementation Targets:</i></p> <ol style="list-style-type: none"> 1. Long-term resident technical assistance (174 months). 2. Approximately 24 person months of short-term consultants. 3. Short-term technical assistance (201 workmonths). 4. Approximately 816 workmonths of support staff. 5. 93 training courses supporting privatization. 6. Providing select seed equipment amounting to \$246,000. 	<ol style="list-style-type: none"> 1. Project records and documents. 2. Interim progress report and end of project evaluation. 3. Training records. 	<p><i>Assumption for Providing Inputs:</i></p> <ol style="list-style-type: none"> 1. Authorization of project. 2. Continued support by USAID and GOC. 3. Availability and receipt of equipment.