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Final Evaluation
Managed Inputs and Delivery of Agricultural Service
(MIDAS II)
641-0102

by

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Prologue:

The evaluation team had the option of taking one of several approaches in this evaluation. One such approach is an in-depth, substantive analysis of the technical aspects of the Ghana Seed Company. We chose not to do this because of the detailed evaluation in 1984 on this aspect of the project. Secondly, we might have devoted our energies and those of the company in reconstructing the data base for cost of operations and analyzing the results of the data. And thirdly, we could have opted to redesign yet another phase for the project, clearly not appropriate on the eve of the projects phase out date.

Based on a variety of experiences in agricultural development in Africa, and on consultations in Ghana the Mission Director determined early in July that all was not going as well as had generally been perceived with MIDAS II. Discussions early on with the Managing Director of Ghana Seed Company and with the Chief of Party of Experience Incorporated confirmed earlier feelings that a number of factors, including some outside the control of Ghana Seed Company, E.I. contractors and the USAID, were responsible for the Company's difficulties. The key was to identify the critical elements of disorganization in this evaluation.

The Mission Director assumes responsibility for determining the ultimate direction for the evaluation. It was decided to conduct an assessment of the extent to which the project achieved its objective and the reasons for any shortcomings that were identified. A review of the 1983 Amendment No. I to the MIDAS Project provided the first tangible indicators of pending difficulties. A cursory review of the key progress benchmarks established in the amendment to MIDAS II provided the first test. Unfortunately, achievement of virtually all of the indicators were delayed. The 1984 Evaluation highlighted management issues that appeared still not to have been resolved at this time. Further discussions with Seed Company and contractor personnel tended to confirm that management and accounting were central to the Company's difficulties. If we assume this to be the case, it appears that an assessment of the Company's management and accounting systems should help determine the extent to which it was achieving viability.

Four of the 6 person team had participated in the 1984 evaluation, therefore, the learning curve on the current status of the project rose rapidly and a long period of orientation and reading-in was not necessary. The 1984 evaluation was thorough and comprehensive. It was deemed not necessary to plow again the same ground for a detailed technical analysis of the company. The recommendations in the 1984 evaluation, in fact, provides substantive indicators against which to assess progress.

The evaluation, therefore, focused on the extent to which management and accounting systems were in place or were being established. These systems cover the management of production activities, stocks, purchases, sales and company financial record keeping and reporting. This emphasis, we believe, was appropriate for the evaluation as it provided the basis for review of a parastatal with a

view to satisfying the concerns of the PNDC Secretary for Agriculture with regard to strengthening management systems in its parastatals where feasible and increasing the role of the private sector as appropriate.

This evaluation is not a comprehensive treatise of the GSC's management and accounting shortcomings to have done so would have been overkill which would have served no reasonable end. Suffice it is to say that sufficient evidence was obtained to indicate that certain changes are necessary and sufficient to place the Ghanaian Seed Multiplication, storage and distribution, storage and distribution function on a sound and effective basis.

Acronyms used in this report are listed in Annex 1.

William S. Lefes
Director
USAID/Ghana
November, 1985

The Evaluation:

The first phase of this project, MIDAS I, started in 1975 and ended in 1979. Phase 2 or MIDAS II, begun in 1980, is scheduled to end in September 1986. The technical assistance team is scheduled to complete its current contract by March 31, 1986. However, the Government desires continued USAID support for the Ghana Seed Company, the only surviving component of the more comprehensive MIDAS II project. In order to assess the extent to which the project may have achieved its purpose, i.e., to establish the institutional capacity to multiply process and distribute improved seed as a viable independent profit making company, and the constraints it encountered in the implementation phase, the Mission and government undertook this evaluation.

The team effort was organized by USAID/Ghana, the Government of Ghana (GOG), represented by the Ghana Seed Company, Ministry of Agriculture and Ministry of Finance and Economic Planning, the Agency for International Development in Washington (AID/W) and the Regional Economic Development services organization in Abidjan (REDSO/WCA).

Members of the team included:

Gene Rauch, Planning and Development Officer
REDSO/WCA, Abidjan Team Leader, Nov. 3-7
William S. Lefus, USAID/Director, Team Leader Nov. 8-22
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Four members of the team (*) had participated in the mid-project evaluation in January-February 1984.

Meetings were held with officials at USAID, Ministry of Agriculture, Ghana Seed Company (GSC), Experience Incorporated technical assistance team, Canadian High Commission, Embassy of Federal Republic of Germany, Ministry of Finance and Economic Planning the Ghana Investment Centre, the Agriculture Development Bank (ADB) and the Crop Research Institute. A large number of persons gave generously of their time and willingly shared their experience with the team. See Annex 1 for a list of contacts.

Four field trips were made to GSC sites at Winneba, Ho, Kumaasi and Tamale and visits were made to private farmers in the Accra area.

During GSC site inspections, the team interviewed contract growers, small farmers, officials of local and international organizations associated with GSC programs. Special thanks are due Dr. and Mrs. G. Schmidt, Project Manager of German Ghana Project, CRI, Nyanakpala for hospitality and arranging accommodations for the team in Tamale.

We wish to acknowledge the cooperation and assistance of Mr. Josiah Wobil and his staff both in Accra as well as Winneba, Ho, Kumaasi

Bolgatanga and Tamale. The Ghana Seed Company personnel put aside their regular duties to provide information and other assistance to the evaluation team within a concentrated two week period. Others who were also generous with their time included the General Manager and his staff at NORRIP, Research staff at Nyankpala, consultants at DAPIT in Tamale and the German financed machinery fabrication factory, the Ministry of Agriculture and Mr. P.V. Obeng, member of the PNDC and Chairman of the Committee of Secretaries who took time to brief the team on Government's Policy on agriculture and parastatals. Last but not the least a general thanks is due Ms. Christine Ayi of the USAID who typed endless drafts and the final report. See Annex 2 for persons contacted by the Evaluation Team.

**Evaluation Summary
Ghana Seed Company Limited**

1. Introduction:

In 1975 USAID agreed to provide assistance to the then existing Seed Multiplication Unit of the Ministry of Agriculture under the Project-MIDAS I. Growing out of this unit the Ghana Seed Company (GSC) was incorporated in April 1979 under the Companies Code, 1963, Act 179 with a stated capital of 2000 cedis.

In 1980 USAID supported the Ministry of Agriculture's second phase of the project - MIDAS II - approved for five years. This phase was designed to assist the newly established Ghana Seed Company which was simply lifted from the Ministry of Agriculture as the Seed Multiplication Unit. The purpose of the project was to develop the institutional capacity of GSC to effectively multiply and distribute improved seed in Ghana. Unfortunately the project experienced difficulties and in 1983 MIDAS II was redesigned to further reduce the scope of GSC to enable it to survive and to achieve institutional viability. At that time a decision was made to reduce plant capacity at some of the five sites, concentrate on completing the facilities at Winneba and upgrade the Tamale facility. Decisions were also taken in 1983 to further reduce GSC's activities, seek additional donor support, focus on management and accounting activities and emphasize on-site training.

2. Performance

GSC operates 12 foundation seed farms according to data in the initial documents justifying the project. GSC has access to about 500 acres with a potential for producing 3000 bags of maize, 500 acres for 4400 bags of rice, 14 acres for 100 bags of groundnuts, 12 acres for 50 bags of sorghum and 19 acres for 5800 bags of cowpeas. In 1984 GSC planned to cultivate 374 acres for maize with an estimated yield potential of 2115 bags, it actually cultivated 390 acres with a yield of 2371 bags. Rice acreage planned was 450 with a projected yield of 3250 bags while actual production from 421 acres cultivated was 3368 bags. Groundnuts yields were below projections as were cowpeas. Most of the foundation seed farms are 30 to 70 miles away from regional offices. Such distances under current road conditions do not augur well for maintaining equipment in satisfactory operational state or in keeping down the cost of fuel and operations. While we acknowledge that it is not always possible to select ideal ecozones for seed farms, the fact that widely dispersed farms are used, operation costs are high and wear and tear on equipment is substantial.

On the accounting side, GSC has had difficulty complying with provisions of the Ghana Companies Code, both in day-to-day operations and in the presentation of financial statements. The lack of an adequate remuneration schedule and other incentives was a distinct handicap in attracting staff. To date GSC has prepared accounts for the year ended 31st December 1983, and these have been audited. The 1984 accounts were in the course of preparation and were available in draft to Price Waterhouse in early November. The accounting firm did not utilize the drafts as they believed they were not definitive for their work.

Actual control of revenue and expenditure is not appropriate for a company of the size and scope of GSC. Procedures for buying seeds, for example, is not methodical and is done without cognizance of market demand. The company purchased seed in addition to its own foundation seed in excess to demand, thus experiencing substantial losses.

There is reason to believe that quality control of foundation seed multiplication operations at contractor sites is not vigorous, a fact recognized by farmers who prefer their own seed to that sold by GSC.

The company does not maintain an asset register, therefore, it has not written off assets since the inception of the Company. In addition there is no schedule of current value of the fixed current value of assets because the current practice with regard to seed stocks is to value them at cost whereas the Companies Code states that stocks must be valued at the lower of cost or net realizable value and this has not been followed. The stocks are overstated and seed stocks are carried from one year to the next without reference to the condition of those stocks. This practice tends to understate the company's losses.

The GSC Board Directors has not exercised vigorous oversight of the company. However, it should be recognized that the PNDC disbanded all boards at the outset of the revolution. It is only in recent times that boards have come back into being. GSC, like other parastatals, operated under organizational handicaps not always of its own creation.

The GSC has not distributed a list of debtors as required by the Companies Act. The amount of outstanding debt has grown and we have reason to believe that these are not recoverable in full. Other practices or the lack thereof in maintaining accounts indicates a serious breach of prudent management as well as the Companies Code and reflects an area of skills training that may have been overlooked.

Prudent Management Practices have not been consistently applied in operating the Company. There is a very little interaction between GSC and the Extension Service, for example. GSC developed its own village distribution points to provide farmers with inputs. It would have been helpful for Extension to have had a more active role, however. Extension does not provide a support role to the seed industry by helping to create a demand in the villages. There is close cooperation between GSC and Extension in 15 to 20 districts according to the General Manager of GSC.

The marketing strategy of GSC is less than effective. The need for seed by development projects alone would appear to have provided a reasonable market base for GSC seeds. VORADEP and URADEP and eventually NURRIP are all good candidates for GSC seed sales. The situation has changed since 1984. In the North virtually all seed was distributed by VORADEP while in the South most seed was sold to individual farmers.

GSC's cost of production is high compared with contract farmers. The utilization of vehicles and equipment does not appear to be well organized and maintenance of equipment has not received the priority it possibly deserves.

The 1984 mid-term evaluation recommended completion of the Winneba facilities, however to date the office block is completed, cold storage rooms are 20 percent complete and the foundation for a machinery shed and workshop has been laid. A contributing factor to these delays is governments delay in paying contractors.

The Winneba plant is designed to process and store 25,000 maxi-bags of maize over a 60 day harvest season. As it is quite unlikely that this capacity will be fully utilized in the near future, plans need to be made to use the facilities for other seeds as well. The Winneba plant may also be used as a seed export facility one day. This alternative use was anticipated in the project. However, the cost effectiveness of overbuilding at this time is subject to question.

The relationship between contract growers and GSC is not favorable to either party. GSC depends on growers for most of its seed, and the growers have come to depend on GSC as buyer of seed. In reality, when the market is good, growers tend to sell to farmers directly; and when the market is unfavorable, they tend to hold GSC to their contracts. Overall, GSC Management believes the special relationship between it and its contract growers is advantageous to both parties.

2. Conclusions:

It appears all parties to the project agreement had unrealistic expectations that a group of government workers as well intentioned as they might have been and well trained in agriculture would be able to operate a multimillion cedi commercial enterprise. Despite the handicap in lack of business acumen, credit is due to the civil servants who at least produced seed, stored it and sold it to farmers under extremely adverse economic conditions.

USAID may have erred in proceeding after the 1984 evaluation when it was evident that accounting, inventory control and other management systems were not in place by that time and appeared unlikely to be established in the near future.

It was evident that by 1983 the U.S. technical effort failed to come to grips with the management problems of Ghana Seed Company, e.g., it was dealing with a commercial enterprise that was unable to cope with the realities of a commercial seed company's management problems, accounting systems, maintenance and repair responsibility, pricing of commodities and a vigorous sales effort.

GSC failed to adequately take into consideration the supply-demand situation in the economy and thus found itself guessing at prices, inventories and sales projections.

The German technical assistance effort at CRI Nyankpala and Canadian CIDA effort at CRI Kumasi both develop improved seed as a product of their aid. Consequently, both donors have appealed to USAID to continue to assist seed multiplication and distribution activities in Ghana as the demise of a seed industry would be adversely affected. The

Ghana Seed Company Managing Director realizes the company's difficulties, and as a technical Manager wants to see the Seed Company succeed.

As a policy matter, the USAID also wants to continue to assist the GOG with its seed industry. However, based on past performance it has become very cautious and will seek opportunities that will ensure reasonable expectations for success in the achievement of Government's objectives with regard to its seed industry.

It will support the PNDC's policy to encourage private sector participation in state run organizations, particularly in management. It will participate in a new phase if the enterprise's activities are sufficiently prescribed to avoid an unacceptable burden to the Government's recurrent cost budget and the U.S. Congress appropriates the necessary funding. USAID will also seek and encourage the establishment of supporting policies with regard to prices, agricultural inputs, storage and transport to ensure success of the activity as well as that of the agriculture sector in general.

4. Recommendations:

A. A fundamental reorganization of the entire seed multiplication and distribution functions in Ghana is clearly indicated to enable a seed company to operate as a commercial entity.

(1) The Government should be prepared to reorganize the seed company as soon as possible.

(2) Reduce the scope of operations of the Seed Company.

(3) Reorganize a Seed Company around a corps of technically competent GSC personnel who have demonstrated their skills over the years.

(4) Establish a wage and salary scheme that is competitive with the Ghana Private Sector.

(5) Reorganize foundation seed farms and operate them as economic farming units. They should be located reasonably close to area offices to ensure adequate logistic support and oversight.

(6) Install a management team to take over the functions of General Manager, Finance and Technical Directors. Duration - up to four years.

B. Government will permit private share holding in the company.

C. Reorganize the new Seed Inspection Service in keeping with modest but realistic needs for Ghana.

D. Provide the Extension Service with current information on new varieties and technology packages in order to improve the demand base for GSC products.

E. MOA determine that it needs assistance to design the next phase and request a seed company oriented team to prepare and negotiate the conditions for establishing a seed company on a sound and commercial basis.

FINAL EVALUATION ANALYSIS
PROJECT PAPER, AMEND I
GHANA 641-0102
MANAGED INPUTS AND DELIVERY OF AGRICULTURAL SERVICES
(MIDAS II)

I. Ghana Seed Company (GSC)

a. Historical

Since its inception, the Ghana Seed Company (GSC) has undergone a number of evaluations to ascertain the technical aspects of its operations. As early as 1975, the original MIDAS I (Phase I) identified the actual need for a seed program in Ghana and, provided assistance to the forerunner of the GSC, the then existing seed multiplication unit (SMU) of the Ministry of Agriculture (MOA). After determining the futility of enticing foreign seed company participation in the existing seed industry in Ghana, emphasis was directed to re-organizing and strengthening the SMU, its staff, facilities, equipment and its financial position.

MIDAS I directed its efforts to the SMU, since basic infrastructure (staff, facilities, equipment, etc.) already existed, and it appeared both logical and feasible at that time to build upon an existing organization rather than introduce a totally new component into the Ghanaian agricultural industry.

It is well documented that the implementation of MIDAS I was extremely erratic with little evidence of timely achievement of project objectives. Thus, AID/W scheduled a re-design of the project in February 1980 to cover a five year period, FY 81 - FY 85. The new phase became MIDAS II. In the re-design effort, the stability of the SMU was still recognized; however, the decision was made to create the Ghana Seed Company (GSC) in order to facilitate the organization of a commercial, parastatal seed company in Ghana which could effectively operate completely outside the limitations of the MOA. To accomplish this and to justify continued USAID support, the complete SMU program was simply "lifted" from the MOA and technically authorized by the Government of Ghana (GOG) to function as the parastatal GSC. Thus, all personnel, equipment assets, etc. became the property of GSC which was then designed to become an effective, profit-making seed company in Ghana.

In retrospect, it could be argued that such transformation from the public sector MOA to a parastatal GSC company might have slim chances of success given the extreme environmental and economic fluctuations (cycles) in Ghana. A major cause was the broad scope of the original SMU program which encompassed the entire country from sites in the north (Bolgatanga and Tamale) through the Central zone of Kumasi and finally the lower regions of Ho and Winneba. Such a vast operation with accessory personnel, facilities, equipment, labor, vehicles, etc. demands management expertise, which under the most favorable conditions and logistical support of well developed countries and seed programs, are formidable challenges. Perhaps we were all overly optimistic that in Ghana such wide ranging activities and management requirements would develop on schedule and with minimum problems. It should be pointed out, however, that the scope of activities in the project revision were reduced somewhat in that full support to the Ho unit was drastically

reduced and only conditional emphasis and development was outlined for Tamale. Capital assistance for Bolgatanga was not included in the new project. At this point it was considered feasible to develop a completely new facility at Kumasi similar to the unit planned at Winneba. These decisions were made in view of some rather optimistic assumptions and fairly well-envisioned economic improvements anticipated in Ghana at that time.

In January 1983 MIDAS II was once again scheduled for an evaluation based on on-site observations by USAID monitoring which revealed little progress in the project. Hence, in 1983 the seed component of MIDAS II was once again re-designed with a further reduction of the scope of the GSC. Thus, the re-design exercise recognized that the GSC was the sole surviving component of the multi-faceted 6-year MIDAS I and II projects which had enjoyed a modicum of progress thus far. The re-design team was still convinced of the importance of GSC and attempted to design a feasible project which would assist the GSC develop the institutional capacity to serve as the foundation for renewed efforts which the GOG may take to overcome its critical food shortage problem. Therefore, with these goals still in mind, the major purpose of the revised project was to improve and expand the institutional capacity of the GSC to become a viable, independent, profit making company capable of multiplying, processing and distributing improved seed.

The revised re-design of MIDAS II (Amendment No. 1) extended the Project Assistance Completion Date (PACD) from September 30, 1983 to September 30, 1984. In addition, Amendment No. 1 provided for a mid-project evaluation and review which occurred in February 1984. This most recent evaluation is quite explicit in its detailed review and subsequent recommendations which need not be reiterated in their entirety. It became increasingly obvious that the targeted components of the GSC, that is, Winneba, Kumasi and Tamale, would not likely achieve the desired and anticipated level of operational capacity. As such, the evaluation strongly urged the GSC as a matter of urgency to complete the long overdue facilities at Winneba and to transfer excess in-country equipment to Tamale to up-grade that facility. The lessons learned with the Winneba construction were applied to the Kumasi facility for which the equipment was originally designed. The plan for Kumasi was discarded in frustration as it appeared the work would not be completed in time to serve project requirements. Other rather strenuous and restrictive recommendations included the reduction of the scope of GSC activities, a recommendation to seek additional donor support, concentration on developing management and accounting systems and emphasis on on-site training.

Historically, this brief description brings the project to date where the current review is designed as the final evaluation of the GSC. It is in this context then, that yet another analysis of the technical aspects and operational capability of the GSC is presented.

b. The Seed Program in the Ghanaian Context

Seeds of improved varieties and hybrids are necessary to sustain a developing agricultural sector and must be available in sufficient quantities at reasonable prices and at the proper time each

planting season. Seed supplies can be obtained by various methods: (1) the farmer can save his own seed when composites are used; (2) public sector agencies may produce and distribute improved seed; (3) private seed companies may develop and market improved seed. In the most advanced and well developed seed programs, the majority of seed production and distribution is handled through private sector channels. One reason for this is the demand for intensive management, constant field surveillance and critical timing in handling the seed to preserve germination and varietal quality. These are functions best done in the Private Sector. These large seed industries are dependent to some extent, however, upon the intensive research components of public institutions such as experiment stations, research centers and other public supported agencies. These agencies concentrate primarily on research activities to develop new strains, varieties or hybrids of improved seeds of agricultural crops. Thus, in these systems, there are specific roles for both public and private sectors, and each entity respects the role of the other and coordinates its efforts within a comprehensive seed enterprise.

In many countries of the developing world, however, seed enterprises or programs are relatively new, and seed program components and concepts are not easily placed into proper perspective. Historically, incentives in developing countries are not strong enough to encourage or facilitate the development of a private sector seed component which is vitally necessary to complement the limited government or public sector seed component. When this dual system is not in place but quite obviously there is an urgent need for a country-wide seed service (program), governments or government agencies, out of necessity, assume practically the complete responsibility for producing and distributing seeds usually with poor results. This is the case in Ghana with the current seed program. Documentation of the Ghana case is available beginning with its formative years in the early 1960's Hybrid Maize Seed Production Unit (HMSPU) followed by the Improved Seed Multiplication Unit (ISMU), the Seed Multiplication Unit (SMU) and finally the Ghana Seed Company (GSC) in the late 1970's.

In the early years, the basic infrastructure for the country-wide seed program was established. It consisted of an expansive network of strategic production areas complimented with traditional staffs, facilities, land and equipment which is typical of governmental programs. Such structures have proven inappropriate in most African Countries. Nevertheless, the seed program continued to survive due to the country-wide dependency upon the seed agency for necessary planting seeds. Throughout these early years, the GOG Seed Agencies maintained control and transacted ALL seed production and distribution functions.

In 1968 the expensive GOG seed agency operation began to exact its toll on available resources, and the seed agency (SMU) began to reduce its seed program activities accordingly. At this time some of the private sector seed growers began to contract production for the SMU.

Another view in retrospect at this time would have been for the GOG seed program to completely divest itself of seed production and distribution responsibilities with the exception of providing Foundation Seed to

private sector seed growers. This would have served a dual purpose: First, it would have reduced the scope of the GOG seed operations to a level within its capability while still playing the vital role of initially multiplying new seedstocks (breeder seed) to qualified and competent private sector seed growers. Second, at this critical point in Ghana's seed program, the responsibility could have possibly been shifted to private sector seed growers who were eager to participate in a relatively new venture such as seed production. From all evidence it appears that the more progressive Ghanaian farmers of the era possessed the necessary skills and equipment to excel in the critical aspects of seed production compared to just routine commercial grain production.

However, this was not the case. In the absence of a national seed inspection program, the GOG seed program continued to assume the responsibility for both foundation and certified seed production and consequently the "in-place" facilities, staff and equipment was deemed essential and consequently had to justify its existence. Economic conditions in Ghana continued to deteriorate eventually leading to the involvement of the documented USAID support projects to the GOG seed agencies and finally to the establishment of the parastatal GSC. Thus, from the initial over optimistic approach of supporting all five seed units (Winneba, Kumasi, Ho, Tamale, Bolgatanga), the USAID project support was finally concentrated primarily in three areas, Winneba, Kumasi and Tamale.

One can reflect over past project successes and failures and ask if the initial approach was sound. In fact, this question has been asked a number of times. When one reviews case studies in numerous developing countries around the world, it becomes quite apparent that most countries are desirous of developing their indigenous seed programs for various reasons, e.g., uninterrupted seed supply, adapted varieties, protection against external pests, etc. Many donor agencies support seed programs or elements of them as a matter of priority. It is understandable that Government officials who negotiate donor assistance tend to siphon off such aid for the establishment of public sector seed programs. Unfortunately, successful seed production and distribution is an area that seemingly needs both private and public sector cooperation.

The Ghana case for a national seed program is adequately documented. Recent reports and evaluations of other donor agencies have identified and stressed the need for the continued existence and operational capability of the GSC. Primarily, the GSC should serve as the vital link between the donor - supported research programs such as the CTDA supported CRI program at Kumasi and the GGADP supported program at Nyankpala. With such evidence in hand and with the re-newed support from the GOG, it appears that the seed multiplication, processing and distribution function must continue to survive in some capacity to serve the vital seed supply requirements of the agricultural sector.

II. Project Inputs

a. Training

Fifteen persons were sponsored for short term training overseas over the period 1977-1985 for a total of 195 person weeks of training. The total cost for training was \$187,870. Seventeen persons were sponsored for seed improvement/technology courses, three in Management and organization and two attended the International Rice Commission meeting. Seven trainees were assigned to the Accra office, 2 to Kumasi, 2 to Winneba, 3 to Ho, 2 to Tamale 1 to Bolgatanga and 1 to Logba. Three trainees resigned and sought employment elsewhere. See Annex 3 for details.

b. Commodities

About \$5 million in commodities was provided to the Ghana Seed Company under the MIDAS I and II projects. These included 31 vehicles, and spares, 10 motorcycles and spares, 11 tractors, 1 rice combine harvester, and tractor implements, seed drying and processing equipment for two sites, repair equipment, tools, transceivers and building and electrical equipment. Workshop and machinery storage facilities have not been constructed as yet at any of the sites. Delay in construction is attributed to GOG's untimely release of local currency for its part of project construction. See Annex 4 for details.

c. Technical Assistance

A total of \$2,577,076 was committed for 331 person months of technical assistance between March 1, 1977 and March 31, 1986.

Of the total projected consultancies, 326 person months were for long term consultants and 5 person months for short term service. A total of 10 different served the GSC over this period. The chief of party for the Experience Incorporated Contract served continuously since July 1, 1977, but only since late 1981 as chief of party. There was reasonable continuity of consultants to the project over the life of the project. See Annex 5 for details.

Table 11
USAID Contribution to Ghana Seed Co.

	Estimated (Thru 3/31/86)
Training	187,870
Commodities	6,224,500
Tech Assistance	<u>2,577,076*</u>
	<u>8,989,446</u>

Includes short time consultants as well as long term.

The Contractor, Experience Incorporated (E.I.) had an opportunity to establish management procedures that were necessary for the effective operation of the company and to train management staff to carry out its responsibilities. The same can be said for accounting and marketing as well. The contractor did not do so. The GSC finds itself in due straits and is unable to analyze the reasons for its difficulties. E.I. acknowledges that it had emphasized the seed technology aspects of the project and provided experienced staff in this area. The USAID has taken

a much harder line on this shortcoming than the team of 1984, for example. However, the absence of sound management accounting and marketing systems and appropriately trained staff to carry out the work makes it difficult for USAID to turn over the project to the GOG as a soundly established, viable entity.

III. Technical Aspects of GSC Operations

a. Production Capability

(1) Foundation Seed Production

The production of foundation seed directly by the GSC has had its difficulties even though at times excess foundation seed is consumed as food. However, this is subject to considerable variation depending upon weather, adequate acreages, condition of equipment and proper management. For example, in the 1983 re-design of MIDAS II it was assumed that GSC foundation seed farms had the potential of producing 2,975 bags of maize on 537 acres. However, the Experience, Incorporated (EI) Contractor's Third Annual Technical Report, March 1985, shows actual maize production of 784 bags on 387 acres. Likewise, for each of the seed kinds (rice, sorghum, groundnuts, cowpea), it consistently appears that annual projections are seldom if ever met.

Annex 6 provides comparisons of planned acreages and production compared to actual acreages and production achieved in 1985. These are at variance with E.I.'s third annual technical report of March 1985.

Thus, production shortfalls of this magnitude in anticipated foundation seed production are serious and create doubt as to the actual operational capability of the GSC foundation seed farms. Discussions with GSC management and EI Contractors reveal serious problems in operational capacity of equipment, farm management capability, and utilization of adequate production inputs to achieve optimum levels of seed production. See page 51 of the Third Annual Technical Report (March 1985), Experience, Inc. for some of the reasons for the disappointing maize production. Therefore, with such low levels of foundation seed production at the GSC foundation farms, it is difficult to project higher production levels for the near term considering the enormous problems of logistics and financial constraints facing the GSC.

(2) Certified Seed Production

The bulk of certified seed in the Ghana Seed Program is produced by private contract seed growers. This aspect is in jeopardy now as growers are experiencing economic difficulty and non-payment by GSC. Reliance on private contract growers began in 1968 while the seed multiplication unit was still in the Ministry of Agriculture. Inclusion of private contract growers appeared to encourage private sector involvement in the national seed program. Seed growers were selected based upon their integrity and ability to utilize advanced production practices to ensure high quality seed. Initially, it was anticipated that seed growers would organize into regional grower associations which would promote their image as private seedsmen and possibly strengthen their position and create "spill-over" effects of improved seed to their village-farmer neighbors.

Contract seed-grower unity has not developed as originally anticipated. Problems seem to plague these certified growers similar to

those experienced by GSC in their foundation seed program, i.e. lack of equipment, price fluctuations, inadequate inputs (fertilizer) and unpredictable weather. Also, since GSC has experienced a severe financial crisis, contract growers have not been paid fully for last year's production. Nevertheless, it appears that a few of the growers may yet support the GSC program and continue to participate in the certified seed production program.

The contract seed production scheme needs to be reviewed again. Originally, it was anticipated that the arrangement would be of mutual benefit to both the GSC and private sector seed grower. But, it appears that growers have come to depend too heavily on GSC services. They expect GSC, through its internal sources and contacts, to be able to ensure fertilizer, equipment maintenance and transportation for their certified seed production activities. To some extent, the arrangement has worked; however, it is quite apparent that in times of economic difficulties and environmental stress, the GSC cannot provide these services. Seed growers must be encouraged to assume more responsibility and independence in future arrangements with GSC.

It appears that in good production years and under somewhat normal conditions, the GSC can secure adequate numbers of growers with sufficient acreage to produce relatively large quantities of certified seed. However, unanticipated impediments and constraints frequently reduce production levels drastically. One of the main problems with certified growers addressed in the last evaluation was that of proximity between GSC and growers farm. It was recommended that growers be concentrated in an area no more than 20 miles from the GSC unit to minimize travel and logistical support. It was not determined if GSC had made much progress in identifying new growers in closer proximity to their regional centers. Other problems have warranted more immediate attention such as problems related to seed surpluses from the 1984 bumper crop and external seed supplies brought in by donor agencies which caused drastic reduction in demand and price.

b. Seed Processing/Storage Capability

The processing unit at Winneba appears to be completed and operational. In fact a recent technical consultant (Dr. Paul Muzynaki) completed an operational check-out exercise with the facility and demonstrated plant performance from beginning to completion of the various stages. No doubt a few mechanical problems may develop which will need attention as the facility assumes full operational capacity.

This plant is designed for output capacity of 25,000 maxi-bags of maize over a 60-day harvest season. It is quite unlikely that this maximum capacity will be attained in the near future; therefore, the plant can be utilized to clean other seeds which GSC might produce such as sorghum or cowpeas. Also, the maize production from Ho is being transported to the Winneba site for drying, processing and bagging. This will help to provide more seed and to utilize the facility to its rated capacity. The continued success of this venture depends upon available transportations.

The conditioned seed storage unit is about 20% complete even though emergency funds were provided by USAID in 1984 to alleviate the

constraints imposed by lack of shelf items such as electrical supplies, etc. Reasons for the continued delay were not completely ascertained, however, it appears that some of the continuing problems still exist: Since the contractor has not been paid on a timely basis, there is little surprise that complete work stoppages have occurred.

One of the five storage compartments is functional and will hold 5000 bags of maize. This was being utilized effectively to maintain the carry-over stocks from 1984 so that the quality will be sufficiently high to permit sale for the 1986 cropping season. When fully completed, this storage facility will provide essential conditioned storage space to maintain approximately 25,000 bags of high quality seed. Urgent action must be taken to insure proper and continued maintenance of the sophisticated chilling equipment to ensure uninterrupted operation. Breakdowns and power outages which interrupt equipment operation for lengthy periods are detrimental to seed quality.

The seed processing equipment originally ordered for the Kumasi site was transferred to Tamale and installed in one of the existing warehouses. Electrical hook up has not been completed on this equipment. This timely move should increase the efficiency and capacity of the Tamale unit. The equipment should become operational in the near future when the electrical components are in place. Re-positioning the equipment was outlined in the previous evaluation in view of the reduced level of emphasis at the Kumasi site. Otherwise, the physical facilities at Tamale remain as they were in past years with the emphasis being on rice and groundnut production and processing. A small quantity of maize is handled at this site. The facilities at the Kumasi location may be the weakest in the entire program.

Even though the Kumasi site is located in an important maize producing region of Ghana, this site continues to experience difficulty in achieving anticipated seed outputs. Very little support has been provided, and the facility continues to limp along in its traditional ways. The seed storage unit which was destroyed by fire has been repaired in part; however, the anticipated completion date was not discussed. Since Kumasi was eliminated from intense project activities under Amendment No. 1 of the MIDAS II, very little has taken place. This unit still maintains its fundamental seed activities, and prospects for improvements are not optimistic.

Little on-site improvement in production and processing capability is evident at Ho. Limited capacity still exists to dry, shell, and process seed at Ho, although storage facilities are adequate. At present, maize production is trucked 120 miles to Winneba for processing. This practice may prove cost effective if the program can depend upon adequate logistical support for timely harvest of the crop and adequate transport to and from Winneba.

c. Quality Control Capability

Each of the designated production centers of the GSC possess the fundamental capability to assess the quality of seed produced. Primarily, this consists of identifying variety and determining its germination rate. This information is printed on the seed tag and attached to each bag of seed. Some doubt has been expressed as to the quality of GSC seed. After cleaning there appears to be problems with

insect infestation and seed deterioration in storage. Other complaints center around varietal mixtures.

There is little effort to perform other quality control functions such as weed seed contamination or identification and determination of other component of standard quality evaluations. With maize, rice and groundnuts, these quality aspects are of minimum importance at this time; however, as the seed program expands to other kinds of seed, more intensive quality control measures will be necessary.

In any case, varietal examination is very difficult to perform in the laboratory. This is a task for researchers at the experiment stations.

In order to complement and provide oversight to GSC's internal quality control program, there is the need for the government to hasten establishment the Ghana Seed Inspection Service (GSIS). This unit is needed to inspect seed growers plots to, among others, verify varietal purity, conduct laboratory tests on seed samples and issue official certification inspection tags to seed distributors. GSIS should also ensure compliance with national seed laws and regulations covering both certified and uncertified seeds. The nature, scope, functions and organization of an appropriate seed inspection service in Ghana is more outlined in the Seeds Regulations Act of 1983. See Annex 7 for both the regulation and attachment 1, a view of the inspection service.

d. Research Division

It is debatable whether GSC really needs a "research division" or can effectively support one. "Research" should surely be limited to breeder seed increase and rigid purification procedures. There may be some need for verification trials of imported seed to determine adaptability and pest contamination. This is a function better done at existing research facilities in Ghana. Research in the area of varietal development is the function of the Crops Research Institute (CRI) or the Ghana/German Agriculture Development Project (GGADP). GSC need not duplicate testing and evaluation programs of existing, competent institutions, as the effort has had a tendency to proliferate GSC's activities and overburden its limited resources. A report on GSC research activities for 1985 is included as Annex 8

IV. Management and Accounting Capacity

a. Management

Management effectiveness was identified as a principal issue affecting operations of the Ghana Seed Company in 1983, 1984 and again in this evaluation despite the fact that the 1984 evaluation indicated that GSC's organization was appropriate and well staffed. While key management personnel possess adequate technical credentials, some with advanced degrees in agronomy, pathology and plant breeding, none are similarly trained in business management or marketing or have had the opportunity to work in a commercial environment in these positions. See Annex 9 for the current structure of GSC.

The national scope of the company and communication difficulties rendered any attempt at management and oversight virtually impossible. This is a problem that should have been flagged at the earlier evaluation

for resolution. The company is not organized for decentralized management which defacto it practices. See Annex 10, the current organization chart. As a result, commitments made in the regions are not easily controlled and over expenditures are likely under these conditions. This results in the lack of management control over seed purchases, sales and inventories.

Given an inventory of about five million dollars in commodities alone, including 31 vehicles and 10 motorcycles, a register of equipment should have been maintained, depreciation of equipment carried out and survey (boarding) of unserviceable equipment systematically conducted. Most important, careful record keeping would demonstrate need for equipment and vehicles as well as cost of operations and spares. As a result, the company now has a formidable task before it to bring its records up to date and to justify further commodity inputs.

An enterprise with rolling stock is always faced with the enormous task of control of the use of the stock. The team noted that a number of vehicles show inordinately high mileage given their assigned tasks. It appeared that no systematic review of vehicle trip reports is undertaken or tractor log sheets maintained nor periodic analytical reports issued of such logs. The team considers such reports an important management tool for the Managing Director and other senior staff. In addition, rolling stock requires considerable maintenance as well as repair. The plans call for workshops and parts storage facilities. Unfortunately the workshops and machinery sheds appear to be the final construction activities. As a result, there is no systematic and secure warehousing of spares, tools and repair and maintenance supplies. Over \$521,000 in spares, mechanics tools, and tires were procured under the project. Secure storage and work space should have been given higher priority in the construction schedule.

The Seed Company was chartered with up to five Board Members. Currently it has eight members including the Managing Director. Under the companies code GSC is required to issue financial statements, to hold annual general meetings and file changes of directors on prescribed forms. There is no evidence the company is complying with these provisions. While not critical to operations, this shortcoming is indicative of management problems in most organizational structures.

The organizational structure of the company is in line with other parastatals in Ghana. However, given its nation-wide scope GSC's highly centralized management seems inappropriate for effective operations.

The sales force has not followed a vigorous program of promotion even though it was paid commissions in 1982/83. In recent times the practice was stopped while a new system of incentives is devised. Nevertheless, GSC maintains a large distribution network of seed agents and sales kiosks. Generally the sales force seems ineffectively deployed and there is a lack of commitment to sales. See Annex 11 for its distribution network.

b. Accountancy

This area of company management has not been able to meet its

obligations under the Ghana Companies Act or to provide adequate financial analysis reporting to the company's management. Under the act, for example, there is a requirement to maintain a schedule of current value of fixed assets. None is kept. The company is required to maintain an asset register for various good business practices of which writing off assets is among them. Actual control of revenue and expenditure is not based on acceptable accounting principles. Also, GSC has not distributed a list of debtors as required under the act. See Price Waterhouse Report, November 1985 for details. Annex 12 provides a summary of principal conclusions of the Price Waterhouse evaluation. Guy Hill, E.I. financial consultant also prepared a detailed report on GSC's financial capacity. The report has not been released by the GSC, however, this does not diminish its value as a second opinion of GSC's financial situation.

V. THE DEMAND FOR SEED

a. How GSC derives demand

The level of demand for improved seed from GSC depends on a number of factors. The most important are: (i) area under cultivation in the past, (ii) past sales trend, (iii) current area projections by agricultural extension officers which are used by GSC to forecast the area to be cultivated under each crop in any district, (iv) seeding rates, (v) seed and food grain prices, and (vi.) GSC sales promotion/effort.

Demand for certified seed is estimated from the level of requirements based on recommended seedings rates and expected yields from improved agronomic practices. Annual demand is then derived by assuming expected farmer replacement rates. To this may be added national seed requirements to be held as security stock. Regional/area demand estimates are made at the GSC Annual Planning Meetings (APM) where sales and demand projections are analysed and allocations of certified seed to each area/region are approved. In both the Upper and Volta Regions where there are IBRD intergrated agricultural development projects, demand for GSC seed is determined by the level of annual requirements obtained from the Farmers Service Centers of the FASCOMS. In the Winneba area, about 30 percent of sales are made to institutions (e.g. ADB, Commercial Bank) and large-scale commercial agricultural enterprises while 70% goes to small farmers. This is in contrast to the northern region where institutions have traditionally purchased about 80% of the output except in 1984/85.

Levels of average annual demand estimated in the 1984 Evaluation Report and adopted by the GSC are compared with demand under an alternative method of calculation in Table 1. Both estimates assume similar seeding rates and expected farmer replacement rates.

Table 1
Estimated Annual Demand for Certified Seed

Crop	Assumed Average Cultivated Area (000 HA)	Area* Under Improved Varieties (000 HA)	Seeding** Rate (KG/HA)	Natl. Improved Seed Reqmt (MT)	Exptd Farmer Repmt Rate (% per yr)	Est'd Annual Demand (MT)	
						GSC	Alternative
Maize	400	240	30	7,200	33	3,636	2,376
Rice	70	56	85	4,760	50	2,863	2,380

*Assumed that 60% of cultivated maize area and 80% of rice area are planted with improved varieties.

**The 1984 Evaluation Report assumed maize seeding rate of 22.5 kg/HA. Using this rate with the above assumptions and a 33% replacement rate would give a national maize seed requirement of 5,400 MT and annual demand of 1,782 MT for maize.

The method of estimating demand adopted by GSC, which has not done demand calculations of its own, (i) assumes higher levels of national cultivated area, (e.g. 486,000 HA under maize) and (ii) ignores area planted under traditional varieties. As such GSC assumes national certified maize seed requirements at 10,909 MT. This although its assumed planting rate is low while farmer replacement rates are realistic, estimated demand is too high. Having greater effect on the level of demand projection is the fact that the process of demand determination has a large element of subjective bias introduced by reliance on estimates of district-level cropped area made by the Ministry of Agriculture's Extension staff. This is exacerbated by the lack of a quantitative nation wide data base on the extent of farmer use of modern inputs and on the number of small versus large farmers. Another source of uncertainty is FASCOM requests in the Volta and Upper regions which are late and variable with adverse effects on demand planning by the GSC.

b. Effect of demand on operations

The low demand for improved seed during the early years of the Seed Multiplication Unit (SMU) was due to the use of low levels of technology on traditional farms and the farmers' lack of awareness of the benefits in using improved seeds.

Through increased extension efforts and the introduction of input subsidies in the 1960's, farmer demand for improved seed increased steadily such that by 1968, the demand for improved seed exceeded the supply of certified seed produced by the SMU. Consequently, the certified seed contract grower system was initiated in 1968 to supplement SMU certified seed production and increase the supply of certified seed.

The results of these strategies were increased seed supply, farmer demand and sales in the 1970's as indicated in the following table:

Table 2
National Seed Sales (MT)

Year	Rice	Maize
1971	736	369
1972	1180	669
1973	1643	1250
1974	1714	1026
1975	1860	1071
1976	1750	950
1977	1607	912
1978	3959	1306

The figures show a 153% increase in rice sales from 1971-1975 and 353% rise in maize sales over the same period. The sales position remained high during the 1970's reaching a peak in 1978. Another source of increased farmer demand was the development of large-scale subsidized, mechanized rice cultivation in northern Ghana. This resulted in the large increase in rice sales shown in the table above.

The demand for and sale of seed in recent years have, however, been affected by a number of factors:

- (i) increased input prices arising largely from the elimination of agricultural input subsidies by GOG. This has resulted lower demand for modern farming inputs
- (ii) the droughts of 1982 and 1983 leading to decreased cultivated area. Increases in national production area in 1984-85 was due largely to good rainfall regimes
- (iii) low food crop prices in 1984 resulting in reduced cultivated area in 1985
- (iv) very low levels of extension activity by the Ministry of Agriculture. As such, very little interaction currently exists between the GSC and the Extension Service at a time when extension is needed to promote improved technology package through on-farm demonstrations and other methods. Even the GSC claims they have established their own village distribution points, as the Extension Service input distribution system is very deficient. This contradictory and counter-productive relationship should be resolved. The Extension Service should play a more important role in educating farmers about the need for good seed.

There is also little evidence that GSC coordinates with the Home Economics Extension Service on taste tests for new varieties, consumer surveys for new products including fortified foods utilizing new

seed varieties. There is evidence, however, that this is being done to some extent within the CIDA/CSIR project in Kumasi.

- (v) extension recommendation for maize cultivation advises farmers to save their own seed for cultivation. This is an expected consequence of using open-pollinated varieties implying that short of using hybrids, there is the need for outstanding yield/quality differential to justify GSC prices. In the case of crops which are self-pollinating, farmers tend not to procure GSC seed unless there are distinct yield and consumer characteristics
- (vi) poor sales by FASCOMS especially in the Volta Region. The development projects in Ghana should provide a good stable market for GSC seeds. Programs such as VORADEP and URADEP could play a vital role in the GSC seed program.

The 1984 evaluation shows that contact with VORADEP personnel established a positive reaction for the purchase of GSC seeds. In addition, there was a general consensus that even VORADEP funds could be made available for establishing drying facilities in the Aho region.

Follow up to these relationships with VORADEP failed to materialize. Even though contacts by the evaluation group revealed an apparent willingness to maintain coordination with VORADEP, some method of top-level management agreements must be devised. Although the URADEP program was not observed, comments from various "authoritative" individuals indicated that better cooperation and coordination exists between this development project and the upper region GSC offices at Bolgatanga.

- (vii) very low and subsidized price of uncertified maize seed sold by the Ghana Grains and Legumes Development Board. The effect of this on GSC sales may be significant in the Ashanti and Brong-Ahafo regions where most of Ghana's maize is produced.
- (viii) some limited supply of imported seeds in 1983/84 distributed free or at very low prices. Although no figures are available on the quantities involved, the belief is that the effects may not have been crucial on GSC sales.

The factors discussed above derive largely from Government policy decisions and actions. However, there are other causes of the low sales attributable directly to the GSC:-

- (xi) high seed prices compared to food grain prices. Seed prices are derived from GSC production costs. Where farmers can keep their seeds and in the absence of significant yield/quality differences, this price differential deters sales. However, GSC opines that decreasing maize seed prices by 50% in 1985 from the 1984 level resulted in similar levels of sales in 1985 as in 1984. This indicates the strong effect of other factors on seed demand/sales apart from the price of seed.

- (x) there are germination and quality problems with GSC products due in part to seed mixing by contract growers, reduced viability of GSC seeds not kept in conditioned storage and lack of consumer acceptance studies by GSC marketing staff. Rice seed contamination sometimes results from using combines for several varieties without cleaning the screens between different varieties. GSC management claims maize and rice seed germination standards of 80% to 85% are adhered to at all times. Seed is generally 90% when sold.
- (xi) inadequate GSC marketing strategy and effort due to weak promotion, insufficient sales outlets and methods and inadequate sales personnel. This factor is the most important in determining GSC sales or the lack thereof.
- (xii) overproduction of foundation seeds and large purchases from contract growers resulting in surplus seed supplies that cannot be justified solely on the basis of keeping national seed security stock requirements. Area under cultivation and output from the Foundation Seed Farms are given in Annex B.

c. GSC levels of seed supplies

Table 3
Certified Seed Supply

	1982	1983	1984	1985
<u>Maize</u>				
Supply (MT)	384	1078	173	707
Market Share (%)	10	45	72	295
<u>Rice</u>				
Supply (MT)	822	264	187	**
Market Share (%)	345	11	8	24

**Still demand in harvest

The trend has been to increase the amount of maize seed supplied despite a fall in 1984 while rice seed supply has decreased in relation to demand. This indicates oversupply of maize resulting in the emergency of large carry-over stocks: 941 MT of certified maize seed were carried over from 1984 while the level of carry-over stocks from 1985 may even be higher.

It is evident that GSC has demand/sales problems even with the low volume of production compared to the 1970's. Maize sales in Northern Ghana in 1985 was 24% of a supply or only 70 tons. This supply level was 21% of total maize sales in the region in 1975. Likewise, the supply of rice seed in 1985 was 21% of the 1975 sales level. The extent of achieving GSC sales targets is shown in Table 4.

Table 4
GSC Projected and Actual Sales
(Cedis)

	1982	1983	1984
Projected sales	27,001,000	28,173,200	134,644,000
Actual sales	27,408,790	23,764,766	34,028,704
<u>Actual (%)</u> Projected	102	84	25

Sales in 1984 were only 25% of GSC's own target in cedis. This would indicate the need to drastically improve GSC's sales record.

VI. GSC PRICE POLICY

GSC, much like other agricultural producing firms, establishes sales and procurement prices approved by the Committee on Agricultural Commodity Prices of the Ministry of Agriculture. The Committee, on which GSC's views are represented, recommends minimum guaranteed commodity prices for maize, rice, seed, cotton, tobacco and palm oil to the government for approval. Approved prices then function as floor prices at which GOG will support the purchase of these commodities. In the case of GSC, price levels so determined constitute the purchase and sales price ceilings although GOG, through the Committee, does not dictate price levels to GSC.

Producer prices for purchases from growers in any year are set by GSC and approved by the Committee in August/September of the previous year when contract negotiations begin with growers. The price is the floor set in the contract initially with a premium/discount on quality negotiated about 2-3 months prior to harvesting. This arrangement (a) gives some degree of pricing flexibility to GSC, (b) guarantees the grower a positive return to investment, and, (c) accords GSC the potential to use stringent quality criteria to be selective in seed purchases thereby matching grower purchases to carry-over stock and sale levels.

Purchase and selling prices of maize and rice seeds are shown below.

Table 5
GSC: Purchase and Selling Prices (Cedis/Bag)

Year	Rice		Maize	
	Purchase	Sale	Purchase	Sale
1974/75	20.00	25.00	30.00	15.00
1975/76	21.50	26.00	30.00	15.00
1976/77	25.00	50.00	30.00	15.00
1977/78	60.00	56.00	120.00	60.00
1978/79	100.00	76.00	100.00	60.00
1979/80	130.00	175.00	160.00	300.00
1980/81	300.00	500.00	400.00	700.00
1981/82	400.00	700.00	500.00	1000.00
1982/83	600.00	1000.00	700.00	1500.00
1983/84	2500.00	5100.00	3000.00	6000.00
1984/85	2000.00	3000.00	1500.00	4000.00

Prior to 1979/80, purchase prices were higher than selling prices implying substantial subsidies by GOG, especially on maize. Removal of seed subsidies in 1979 resulted in drastic fall in sales. From that time, prices have increased sharply over previous levels, especially in 1983/84 when rice and maize purchase prices increased by 317% and 329% respectively over the 1982/83 level and sales prices by 410% and 300% respectively. However, there was a decrease in price levels in 1984/85 due to low seed demand and sales. The substantial increase in seed prices in recent months is partly responsible for low sales.

The producer price structure determined by the Committee is as follows:

(a) Actual production costs + contingency + interest on bank loan = guaranteed minimum price (GMP).

(b) GMP + management/supervision profit margin + grower incentive = producer price.

(c) Producer price + premium/discount = recommended producer price.

The actual levels of 1985 approved producer prices and the price structure presented to the Committee are given in Annexes 14 a,b and c.

Table 6 shows the ratios of various price components to the recommended price in 1985.

Table 6
Components of Producer Price as Ratios of the
Recommended Prices in 1985

<u>Component</u>	% Contribution		
	<u>Maize</u> <u>(North)</u>	<u>Maize</u> <u>(South)</u>	<u>Rice</u> <u>(North)</u>
Actual Production cost	43	58	44
Contingency	17	23	17
Interest on bank loan	32	65	33
Guaranteed minimum price	49	69	50
Management and Supervision	3	3	3
Profit margin	10	14	10
Grower incentive	5	7	5
Producer price	66	93	68
"Premium"	44	7	32

The figures show that the cost of producing certified seed is higher in the south than in the north. Hence recommended maize seed prices are higher in the south while the "premium" per unit bag is higher in the north as in Table 7. Another consequence of this is that maize seed in the south costs as much as rice in the north in 1985. This is further evident in comparing recommended prices with production costs in 1985:

Table 7
Current Production costs and Recommended Prices
(1985)
Cedis/Bag

<u>Crop</u>	<u>Production</u> <u>Cost</u>		<u>Recommended</u> <u>Price</u>		<u>Cost/Price</u> <u>Ratio (%)</u>	
	<u>North</u>	<u>South</u>	<u>North</u>	<u>South</u>	<u>North</u>	<u>South</u>
<u>Maize</u>	899	1329	2000	2200	45	60
<u>Rice</u>	1009	-	2200	-	46	-

Prices of certified seed approved in 1985 are higher than warranted even with the 20% profit and 10% incentive included: recommended producer prices give extra "rents" or profits to growers to maintain parity with food grain prices.

Table 8
Actual and Recommended Producer Price of Certified Seed
(1985) (Cedis/Bag)

Crop	<u>Actual Price</u>		<u>Recommended Price</u>	
	North	South	North	South
Maize	1,322.26	2,036.20	2,000.00	2,200.00
Groundnut	1,156.85	-	1,300.00	-
Rice	1,484.22	-	2,200.00	-

Usually, the rule of thumb is that the price of certified seed should be at least 10% higher than that of food. In 1984, however, the recommended price of maize in Southern Ghana was less than the calculated producer price.

The method of certified seed pricing implies that GSC could buy seed cheaper from growers and pass on the savings to farmers in lower prices. The argument that seed prices should be at least a proportion higher than food prices applies strictly to hybrids or composites with very significant yield advantages. To allow an extra premium above those allowed for management and supervision, profit and grower incentive in determining the recommended producer price, seems unwarranted especially in times of low food prices as has been occurring in recent times. These high purchase prices, in addition to other forms of support given by GSC to growers implies high levels of subsidy and protection to growers. (See page 12 of the 1984 Evaluation Report). In the 1984 Evaluation Report mention is made of GSC policy of providing limited inputs in the form of land preparation services, fertilizer, harvesting and drying to certified seed growers unable to obtain these services on their own. The company believed at that time this enabled it to obtain more seed than would otherwise have been possible. Even in times of high food prices, it is necessary only to maintain a margin between food and seed grain prices through an appropriate grower incentive margin as is being allowed by the Committee. The high prices paid by GSC for certified seed results not only in high farmer prices and low sales but high levels of company indebtedness to growers.

The unavailability of up-to-date and useful data on the foundation seed production program does not allow in-depth analysis of the program. However, available data indicate the higher cost of producing foundation seed compared to certified seed.

Table 10
Comparative Costs of Producing Foundation and Certified Seed
(Cedis per bag)

Year	Crop	Foundation Farm	Foundation Seed	Certified Seed
1984	Maize	Kumasi	2,240.00	NA
1984	Maize	Okyoroko	2,119.67	1,585.95
1984	Rice	Naboro	1,469.68	954.08
1985	Maize	Okye:eko	1,915.14	1,613.51

Certified maize seed production on growers' farms has been running about 20% cheaper than GSC's own foundation production program. This implies either less efficient production on foundation farms or merely signifies the inherently higher cost of producing foundation materials. Although the issue is difficult to resolve without further analyses, a more efficient and less expensive foundation seed production program will lead to reduced farmer prices and increased sales.

VII. Conclusion:

The Ghana Seed Company was established with the expectation that it would be able to operate on a commercial basis in providing improved seed to farmers. The assumption that technical persons from the ministry were to operate a large commercial company was unrealistic and unfair to a group of dedicated civil servants assigned to this task. Despite the lack of business orientation, the company with the help of the U.S. contractor, embarked on the task of fabricating the structure of a seed company. During its initial period little thought was given to its management and accounting function. However, by 1928/83 subsidies, high demand for seed for food as well as planting material and free vegetable seeds tended to distort its management difficulties. Also, the Ministry of Agriculture did not take the interest necessary to ensure the company's viability. The evaluation did not, therefore, discover GSC's current problems as these were well known. We merely uttered them more loudly than the 1984 evaluation.

The USAID probably gave the company more commodities than it could use effectively. The Management and accounting staff could not cope with the demands of a rapidly growing company. Its ability to make the best use of commodities and technical assistance was hampered. The USAID and government should have paid closer attention to the 1983 mid-term redesign effort as well as the 1984 Mid-term evaluation, both of which raised legitimate issues which tended to be ignored by all parties.

The GSC is not integrated with other services in government such as extension, development projects, research stations and other seed handling institutions. This has tended to fractionalize the seed industry in Ghana. The lack of a clear mandate for GSC was not fair to its management as it tended to build into the project an element of failure which it could not overcome.

The Seed Company's lack of attention to details such as supply/demand analysis, pricing policy, grower contractual arrangements and cost accounting of its own operations has left it vulnerable in these difficult times.

Current operational practices and lack of management, accounting and marketing support are not conducive to further inputs by external donors or the GOG. The company has had difficulties complying with the provisions of the Ghana Companies Act, e.g., it does not comply with financial reporting requirements, does not maintain an assets register and does not maintain proper control over revenues and expenditures by area managers and departments.

The Seed Inspectorate Service is deemed a necessary adjunct to a sound seed program. However, the present act just approved by government now needs to be implemented with a realistic plan of action.

VIII. Recommendations

Given that a seed multiplication, processing, storage, certification and distribution function is needed in Ghana to ensure its continued progress toward increased productivity as it is certain that without improved seed, either composites or hybrid, Ghana's agriculture industry will not be able to feed the nation and that its average productivity for food crops is too low to provide adequate incentive to farmers to produce, therefore:

A fundamental reorganization of the seed multiplication, storage and distribution functions be undertaken. The guidelines for a new entity should be as follows:

- the reorganization of Ghana Seed Company and the establishment of a joint company with GOG and private share holders.

- reduce the scope of the company's activities, e.g., locate foundation seed farms near area offices where feasible to obviate the need to run tractors and equipment on rough roads over long distances.

- organize the company so that its major activities are near major maize and rice growing areas in Ghana. This means Kumasi and Tamale respectively.

- install a three person Management team to organize and operate the new company and assign them to work with the company consultants. Review progress every six months with the target for complete phase-out of consultants no later than four years.

- as a first step in this effort, the evaluation team recommends an expert team of 2 or three persons who have operational experience with Seed Companies to work with a GOG team to design and negotiate the basis for a new company. Hopefully a reorganized company can be launched in 1986 by the government so that little will be lost in the hiatus between the demise of the current firm and the establishment of the new company.

ANNEXES:

Annex 1	Acronyms
Annex 2	Persons Contacted
Annex 3	Participant Training
Annex 4	Commodities Purchased
Annex 5	Technical Services
Annex 6	Foundation Seed Production
Annex 7	Seed Regulation Act, 1983
Attachment 1	The Seed Inspectorate Service
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A	Case A
B	Case B
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ANNEX 1

ACRONYMS

ADB	-	Agricultural Development Bank
ADPs	-	Integrated Agricultural Development Projects
CIDA	-	Canadian International Development Agency
CIMMYT	-	International Center for Wheat and Maize
CRI	-	Crops Research Institute
E.I.	-	Experience Incorporated
FAO	-	Food & Agriculture Organization of the United Nations
FASOCM	-	Farmers Services Company
GGADP	-	Ghana/German Agricultural Development Project
GOG	-	Government of Ghana
GSC	-	Ghana Seed Company
GSIS	-	Ghana Seed Inspection Service
IITA	-	International Institute of Tropical Agriculture
MIDAS I	-	Managed Inputs and Delivery of Agric. Services, Phase I
MIDAS II	-	Managed Inputs and Delivery of Agric. Services, Phase II
MSU	-	Mississippi State University
MOA	-	Ministry of Agriculture
NORRIP	-	Northern Region Rural Integrated Program
PP	-	Project Paper
URADEP	-	Upper Region Agricultural Development Project
USAID	-	United States Agency for International Development
VORADEP	-	Volta Region Agricultural Development Project

PERSONS CONTACTED

William Lefes, USAID/Ghana Mission Director
 Josiah Nobil, Managing Director, GSC
 Ebenezer Blay, General Manager, GSC
 D. Gyamara-Amoako, Sales & Distribution Manager, GSC
 V.K. Coran, Director of Research, GSC
 Anthony Amihere, Quality Control, GSC
 Orris Shulstad, Processing Specialist and Chief of Party, E.I., GSC
 Sheldon Sandager, Production Manager, E.I., GSC
 David Johnson, Agro-mechanization Specialist, E.I., GSC
 P.V. Opong, Coordinating Secretary and member of the PNDC, Accra
 Ibrahim Adams, PNDC Under-Secretary for Agriculture (Crops), MOA, Accra
 J. Erzuah-Nyenzah, Chief Accountant, GSC
 P. Foku, Production Manager, GSC
 F. Hammond, Seed Processing Manager, GSC
 E.K. Bampeh, Internal Auditor, GSC
 F.M.T. Kitcher, Ag. Administrative Manager, GSC
 R. Hesse-Owusu, Area Manager, GSC, Winneba
 F. Moses, Deputy Area Manager, GSC, Winneba
 J. Ametepa, Asst. Manager/Processing, Winneba
 H. Akanku, Area Manager, GSC, Tamale
 T. Bonney, Area Manager, GSC, Kumasi
 L. Delmini, Area Manager, GSC, Bolgatanga
 A. Ocloo, Acting Area Manager, GSC, Ho
 N. Adjei, Farm Manager, GSC, Logba
 J. Hornaku, Quality Control Officer, GSC, Ho
 L. Djokoto, Senior Research Agronomist, VORADEF, Ho
 S. Aeffor, VORADEF, Ho
 G. Schmidt, Director, Nyankpala Research Station, CRI
 L. Diehl, Agricultural Economist, CRI
 K. Ampong, Maize Agronomist, CRI
 W. Schipprack, Sorghum/Millet Breeder, CRI
 K.O. Murfo, Legumes Breeder, CRI
 H. Mercer-Quarshie, Co-Manager, CRI
 P.K. Sallah, Maize Breeder, CRI
 F. Robertson, Appropriate Technology Center, DAPIT, Tamale
 A. Turkson, Prin. Agric. Officer, Ministry of Agriculture/GSIU, Accra
 T. Biney, Former Project Manager, MIDAS Executive Committee, Accra
 S. Senyare, Deputy Area Manager, GSC, Tamale
 C. Achaab, Production Officer, GSC, Tamale
 Huku Yahaya, Regional Secretary, Northern Region, Tamale
 J.K. Debaako, Regional Administrative Officer, Northern Region, Tamale
 R.I. Mahama, Director, NORRIP, Tamale
 R. Bowes, Canadian High Commission, Accra
 F. Mnyke, Embassy of the Federal Republic of Germany, Accra
 F. Aguko, Embassy of the Federal Republic of Germany, Accra
 Prof. E.V. Doku, Dean, University of Ghana, Legon
 W.D. Lobban, LOBBAN, INYDE & CO., Chartered Accountants, Accra
 I. Irwinson, Price-Waterhouse, Resident Representative, Accra
 V. Sackeyfio, Price-Waterhouse, Resident Representative, Monrovia
 H. Siegbiel, Project Coordinator, Ghana German Agric. Dev. Proj, Tamale

S. Odame-Labi, General Manager of the Agricultural Development Bank, Accra
J. Awuah, Deputy Managing Director, National Investment Bank
Dr. K. Ampong-Nyarko, Crop Research Institute, Kwadaso
Two contract seed grower groups in Winneba and Tamale

PARTICIPANT TRAINING
GHANA SEED COMPANY

1977-1985

	PARTICIPANTS NAME	TYPE OF COURSE	DURATION	COST	LOCATION	ASSIGNMENT
	Josiah Nobil	Organization Dev. Skills	6 weeks	6,568	Accra	Managing Director
	G.E. Hanson	Seed Improvement	10 weeks	6,565	Kumasi	Div. Production Officer
	Franky Moses	Seed Technology	12 months	16,800	Winneba	Assistant Area Manager
	Ebenezer Elay	Mgmt & Organization	6 weeks	4,175	Accra	General Manager
	Anthony Asihert	Seed Improvement	9 weeks	7,464	Accra	Quality Controller
	F. Hammond	Seed Improvement	9 weeks)		Accra	Processing Co-ordinator
	Alfred Ocloo	Seed Improvement	9 weeks)	31,591	Ho	Assistant Area Manager
	Raymond A. Zinge	Seed Improvement	9 weeks)		Bolgatanga	Senior Div. Asst. Quality Cont.
	P.M.T. Kitcher	Mgmt. of Govt in Dev.	8 weeks	10,242	Accra	A/Asst. Officer
0.	Kofi Abunyewa	Seed Improvement	9 weeks)		Kumasi	Snr. Div. Asst. Processing Dir.
1.	Cletus A. Achab	Seed Improvement	9 weeks)	29,061	Tamale	Div. Officer Production
2.	N.K. Adjei	Seed Improvement	9 weeks)		Ho	Div. Officer Production
3.	Victor K. Ocran	International Rice Commission	2 weeks)	8,200	Accra	Research Co-ordinator.
4.	Josiah Nobil	International Rice Commission	2 weeks)		Accra	Managing Director
5.	Y.A. Dimurah	Seed Improvement	10 weeks	6,586	Tamale	Snr. Div, Asst Processing Dir
6.	Julius Anetefe	Seed Technology BSc.	12 months	11,630	Winneba	Seed Processing Manager
7.	Nathaniel Adjei	Seed Improvement	10 weeks	6,255	Logba	Farm Manager
8.	Alfred Ocloo	Seed Improvement	10 weeks	6,255	Ho	Assistant Area Manager
9.	Evarist Allotey	Seed Improvement	10 weeks	6,255	UNK	Resigned
10.	Sarah Nunoo	Seed Technology	12 months	11,786	UNK	Resigned
11.	Yakubu Dimurah	Seed Improvement	10 weeks	6,564	Tamale	Processing & Personnel Head
12.	John Acha	Seed Technology	12 months	11,786	UNK	Resigned
		Total	195 weeks	\$187,870		

RIMS PROJECT
COMMITTEES FOR United States of America
1977 - 1987

ANNEX 4

ITEM	QUANTITY	DESCRIPTION	IBAC #	DATE & YEAR	COST	LOCATION	REMARKS
1	1	Chevrolet subvan with spares	60493	DEC. 1976	19,000.00	Accra	Unserviceable
2	1	Chevrolet 15 Ton with spares	60495	DEC. 1976	19,000.00	Accra	Unserviceable
3	1	Bus with spare parts	60497	DEC. 1977	1,500.00	Accra	Unserviceable
4	2	Set of 7ml box	60106	DEC. 1977	5,650.00	Accra, Kessu, Tambo	
5	1	Bus Seed Cleaners and spares	60491	DEC. 1977	17,000.00	Siemba	
6	2	Fans Repairs	60462	DEC. 1977	2,317.00	Siemba	
7	20	Boxes of tractor spares	60462	DEC. 1977	66,170.00	Accra	
8	3	Grates, fertilizer spreader	60461	DEC. 1977	1,753.00	Siemba	
9	2	Boxes, Corn Pickers	60462	DEC. 1977	9,811.00	Siemba	
10	4	Trac Pumps	60462	DEC. 1977	1,300.00	Siemba, Tansio, Logba, Ejura	
11	4	Trac Harrow	60462	DEC. 1977	12,171.00	Siemba, Bolga, Tansio, Logba	
12	2	Grates, Irrigation Sprayer	60462	DEC. 1977	2,677.00	Siemba	
13	9	Packages, Agric Machinery parts	60462	DEC. 1977	15,509.16	Accra	
14	11	Boxes, Agric Machinery parts	60462	DEC. 1977	3,921.50	Accra	
15	2	Boxes Sp. System spraying tank	60462	DEC. 1977	1,792.00	Siemba	
16	1	Chevrolet 15 tonner with spares	60117	DEC. 1977	26,000.00	Accra	
17	1	Chevrolet crew cab with spares	60122	DEC. 1977	10,000.00	Siemba	Unserviceable
18	1	Bus audio video equip	60120	DEC. 1977	2,000.00		
19	-	vegetable seeds	60142	JUL. 1977	61,150.00		
20	12	Bus on-board tanks	60105	JUL. 1977	16,350.00	Siemba, Accra	
21	2	Self seed processing plant & equip	60495	DEC. 1978	517,730.00	Siemba-Tansio	
22	1	Bus on-board tank	60106	DEC. 1978	1,291.00	Accra	
23	1	Grate vegetable processor	60106	DEC. 1978	2,200.00	Accra	
24	2	Dis. handpump, plow, furrow	60106	DEC. 1978	2,000.00	Accra	
25	0	Grates gravel separator & screen	60106	DEC. 1978	19,701.71		
26	0	Boxes air screen cleaner sampler	60106	DEC. 1978	12,000.00		
27	-	Install water	60106	DEC. 1978	3,991.00		
28	2	Grate-2 boxes vacuum cleaner Spare	60106	DEC. 1978	60,500.00		
29	30	Grates and separators	60106	DEC. 1978	26,601.00	Siemba	
30	0	Boxes air screen cleaners					
31	1	Bus seed processor	60106	DEC. 1978		Accra	
32	0	Grates, weighing machine	60106	DEC. 1978	20,121.50	Siemba, III for outstation	
33	1	Tractor, hand tank	60107	FEB. 1979	26,000.00	Accra	
34	0	Boxes Macintosh tanks					
35	2	Chevrolet 7 tonner	60102	DEC. 1979	13,940.00	Bolga, Ks, Fomasi	
36		Spare parts, tires, tubes	60102	DEC. 1979	2,376.00	Accra	
37		Spare parts for 7 ton & crew cab	60102	DEC. 1979	1,940.00	Accra	
38	2	Vegetable seed processor	60172	JUNE 1980	134,767.00		
39	2	Self, condition seed storage equip	60101	JULY 1979	581,160.00	Siemba, Tansio	
40	2	Self, seed drying equip	60102	JULY 1979	547,962.00	Siemba, Fomasi	
41		Seed laboratory equip	60103	JULY 1979	65,000.00	Accra	
42	0	Boxes corn pickers hand spares	70075	DEC. 1977	21,200.00	Ejura, Siemba, Ashbon	
43	7	Boxes, agric implement	70075	DEC. 1977	42,000.00	Rile 30	
44	3	Grates, spare parts rice combine	70075	DEC. 1977		Tansio	
45	3	Boxes disc harrow, 1 packer member	70075	DEC. 1977	26,145.00		
46	1	Grass drill & spares	70075	DEC. 1977		Tansio	
47	1	Planter & spares	70075	DEC. 1977		Logba	
48	2	Sprayer, trailer boom type	70075	DEC. 1977		Accra	
49	3	Grates spares, sprayer parts	70075	DEC. 1977			
50	1	Rotary cutter seed vinder	70076	DEC. 1977	3,125.00	Fomasi	

	1	Box spares	70976	OCT. 1977		
21	1	Box auto & tractor parts	70991	JUNE 1978	2,239.75	Used
22		Spare parts chev. 10 tonner	70922	JUL. 1973	8,000.00	Used
23		Spare parts for rice combine	70940	FEB. 1979	3,300.00	Taaale
24		Tires & Tubes tractor & auto	80913	MAY 1978	14,000.00	
25	2	Chevrolet 7 ton truck	80119	FEB. 1979	105,350.00	Accra-Winneba-Bolga 1 serviceable
	1	Chevrolet crew cab				
		Spare parts for above	80119	FEB. 1979	3,955.84	
26		Additional funds \$4117	80920	JULY 1978	8,000.00	
27	4	Panda motorcycle ES15	00042	AUG 1981	5,800.00	Ho, Winneba, Kumasi, Taaale
28	10	I.M. Tractors, Agric Equip Spares	00045	AUG 1981	420,000.00	Winneba, Logba, Ejura, Taaale, Bolga
29		Poly propylene resin	00049	SEP. 1981	50,000.00	
30	4	Portable bag clasher & assorted	00050	SEP. 1981	20,000.00	Winneba
31	4	Spares assorted spares for tractor	00051	DEC. 1981	32,324.00	Accra
32	9	Spids agro chemicals	00052	DEC. 1981	32,700.00	Winneba
33	1	Copy machine	00053	DEC. 1981	2,224.12	
	8	Silivola typewriter	00053	DEC. 1981	2,084.00	
	10	Air conditioners	00053	DEC. 1981	5,020.00	
	10	Grain scale seeders	00053	DEC. 1981	1,272.00	
	5	Skeleton model 1500 & 1520	00053	DEC. 1981	7,920.00	
34	7	Cases tractor & combine parts	00054	DEC. 1981	8,000.00	Accra & Taaale
35	4	Yamaha motor cycles & spares	00057	DEC. 1981	6,000.00	Winneba, Kumasi Taaale & Bolga
36	5	Bones plug tools 1 case machine tools 5 jacks, 5 vises, 5 anvils 5 log chains	00058	DEC. 1981	10,800.00	Accra, Bolga, Winneba, Taaale
37	3	Carlans, Trans receiver radio	00063	AUG. 1982	10,000.00	Accra
38		Spare parts for grain drill	00064	AUG. 1982	7,941.47	Taaale
39		Assorted electrical equipment	00065	SEP. 1982	150,000.00	Winneba
40	12	Bolson pack-up & spares)	00069	SEP. 1982	450,000.00	Accra, Winneba, Ho, Kumasi, Taaale, Bolga
	4	Leyland truck & spares)				
41	-	Vegetable seeds	00071	DEC. 1983	340,000.00	
42	3	Bones airconditioner equipment	00072	JAN. 1984	110,000.00	Winneba
43		Stryper pellet	00073	JAN. 1984	32,000.00	Winneba
44	10	Bones A.T.F.	00074	JAN. 1984	35,000.00	Accra or used
	1	Box truck parts				
	4	Bones Agric implements				
	3	Crates tractor parts				
45	5	Bones Agric machinery & tools	00075	JAN. 1984	10,000.00	Accra or used
46	3	Cases miscellaneous items	00076	APRIL 1984	10,000.00	Accra or used
47	2	Crate & shed machine shop tools	00077	APRIL 1984	12,000.00	Accra or used
48	5	Cases auto replacement parts	00078	APRIL 1984	15,000.00	Accra or used
49		Risc building materials (Lowe)	00081	APRIL 1984	43,375.00	Winneba office building
50		Risc electrical equip	00083	AUG. 1984	11,000.00	Winneba seed processing plant
51		Risc electrical equip	00084	AUG. 1984	8,444.40	
52	2	Bolson pack-up (Lowe)		AUG. 1984	12,000.00	Accra
53	1	Generating set	00085	MAY 1985	28,000.00	
54	-	Risc electrical equip	00086	JUNE 1984	95,000.00	

Sub-Total 84,863,000.44

Emergency procurement fund by E.I. contractor 200,000.00

Grand Total 84,863,000.44

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Summary
Breakdown of Equipment

Vehicle of various types	31
Motor cycle (Honda)	10
Combine Harvester (Rice)	1
I.H. tractor	10
Food tractor	1
Plows Athens	5
Disc PM	5
Planters	3
Plows Davies	2
Disc Pittsburg	1
Seed drill	1
Rotary cutters	2
Trailer sprayers	3
Corn pickers	3
Packer muncher	5
Lowbed trailer	1
Planter	1

Vehicles Breakdown

Leyland 10 ton	= 6
Chevrolet 7-10 ton truck	= 6
Chevrolet crew-cab	= 4
Chevrolet suburban	= 1
Datsun pick-up	= 14
Total	<u>31</u>

ANNEX 5

Technical Services Personnel to Ghana Seed Company

MIDAS I & II

<u>Technician</u>	<u>Period Served</u>	<u>Total Months</u>
1. Thomas Webb	March 1, 1977 to March 1, 1979	24
2. Orris H. Shulstad	July 1, 1977 to March 31, 1986	104
3. John I. Sutherland	Aug. 15, 1979 to Aug. 15, 1981	24
4. Robert Zimmerman	Nov. 1, 1977 to Nov. 1, 1978	12
5. Clarence Eurgett	April 1, 1979 to June 25, 1979	2
6. Timothy Hanna	Dec. 1, 1979 to Dec. 31, 1981	24
7. Kenneth Haines	Sept. 1, 1980 to Aug. 31, 1982	24
8. William Hall	Feb. 1, 1982 to Sept. 30, 1984	31
9. Sheldon Sandager	Feb. 1, 1982 to Dec. 31, 1985	46
10. David Johnson	Feb. 5, 1984 to March 31, 1986	25
11. Guy Hill	March 25, 1985 to March 25, 1986	12
12. Paul Mazyński	Aug. 5, 1985 to Oct. 23, 1985	2
13. Price Water House Chartered Accountants	Nov. 1-23, 1985	<u>1</u>
	Total	<u>331</u>

Cost of Technical AssistanceTo The Ghana Seed Co.

<u>PIO/T</u>	<u>Contractor</u>	<u>Amount</u>	<u>Year of Issue</u>
641-0102-3-10043	Price Water House	\$ 15,000	Oct 1985
641-0102-3-10042	Seed IQC	15,000	Oct 1985
641-0102-3-10041	E.I.	660,000	Dec. 1984
641-0102-3-10034	E.I.	336,780	Oct. 1984
698-0510-41-3-40001 (Regional Funds)	Deloitte Haskins and Sells	27,500	Jan. 1984
641-0102-3-10039	Robert Wesselman	72,449	June 1983
641-0102-3-00036	E.I.	1,202,000	June 1981
641-0102-3-10034	E.I.	192,661	Dec. 1982
641-0102-3-10031	E.I.	<u>55,682</u>	July 1981
	Total	<u>\$2,577,070</u>	

GHANA SEED COMPANY
FOUNDATION SEED PRODUCTION - 1985

	<u>PLANNED</u>		<u>ACTUAL</u>	
	<u>Acreage</u>	<u>Prod Bags</u>	<u>Acreage</u>	<u>Prod Bags</u>
Maize	374	2115	390	2371
Rice	450	3250	421	3368
Groundnuts	15	75	14	50
Cowpeas	44	122	19	57

Source: Ghana Seed Company 1985

Note: Maize bags weigh 200 lbs, Rice bags weigh 140 lbs, Groundnuts (unskilled) 80 lbs and cowpeas 140 lbs per bag.

SEED (CERTIFICATION AND STANDARDS)
REGULATION 1983

Pursuant to the authority conferred by Section 8 of the Seeds (Certification and Standards) Decree 1972 (NRCD No. 100) and N.R.C. Memorandum dated 9 January 1978 by the Commission for Agriculture establishing the Ghana Seed Company and separating the Seed Multiplication Unit from the Department of Agriculture, it is in the interest of the Ministry of Agriculture to amend Legislative Instrument No. 802, Seeds (Certification and Standards) Regulations 1973 to read as follows:

PART I - GHANA SEED INSPECTION UNIT

As provided for in Section 8, Seed Decree 1972, the Ghana Seed Inspection Unit is hereby established to serve as the official seed certification agency with powers and functions as prescribed by the decree.

1. National Seed Committee

- (1) National Seed Committee: The National Seed Committee shall be composed of the following members:
 - (a) Minister/Commissioner/Secretary of Agriculture or his representative;
 - (b) Deputy Director of Agriculture
 - (c) Representative of the Seed Industry;
 - (d) The Officer in Charge, GSIU
 - (e) A representative of Crops Research Institute
 - (f) Representative of the Seed Growers
 - (g) A representative from the Ministry of Agriculture to serve as a Secretary
- (2) The Members of the Committee shall appoint one of their members as Chairman of the Committee.
- (3) The Chairman shall preside at all meetings of the committee except that in his absence a member of the Committee appointed by the members present from among themselves shall preside.
- (4) The Committee shall ordinarily meet for the despatch of its business at such times and places as the chairman may determine but shall meet at least once in every quarter.
- (5) The quorum at every meeting of the Committee shall be five.
- (6) The Committee shall regulate its own procedure.

2. Functions of Committee

The functions of the Committee are:

- (1) Approve and accept varieties eligible to be included, and recommend varieties to be dropped, from the seed certification program.
- (2) Approve quality seed standards and identify classes of pedigree seeds.
- (3) Publish annually the list of varieties included in the seed certification program and their description and recommended area of adaptation.

- (4) Serve as the advisory body of GSIU on working procedures, rules and regulations, field and seed standards, fees and charges all subject to the approval of the Secretary for Agriculture, FNDC.
- (5) Functions as the final appeal board for disputes and interpretations arising from the implementation of decision and decrees related to the seed industry.

PART II - SEEDS CERTIFICATION AND STANDARDS

3. Rules and Regulations

Rules and regulations will conform to those of the International Seed Testing Association to facilitate International Trade.

4. Certification of Seed

There shall be for the purpose of certification of seeds, the following classes of seed:-

- (a) breeder seed
- (b) foundation seed
- (c) registered seed, and
- (d) certified seed

5. Breeder Seeds

- (1) Breeder seed is seed directly controlled by the originating, or in certain cases, the sponsoring plant breeder, institution or firm which supplies the source for the initial and recurring increases of foundation seed.
- (2) Breeder seed shall be issued for the production of foundation seed only and shall be identified with a white tag issued by the certifying authority.

6. Foundation Seed

- (1) Foundation seed is the progeny of breeder seed and must be so handled as to maintain such specific genetic identity and purity as the certifying authority may prescribe, and shall be identified with a white tag issued by the certifying authority.
- (2) Foundation seed shall be produced only by or under the direct supervision of an agronomist on:-
 - (a) an experimental station; or
 - (b) a farm designated as part of an experimental station with a qualified plant breeder in charge of the seed production; or
 - (c) a farm operated on contractual basis with and under the direct supervision of a plant breeder.

7. Registered Seed

- (1) Registered seed is the progeny of foundation seed and must be so handled as to maintain such genetic identity and purity as the certifying authority may prescribe.
- (2) Registered seed shall be identified with a purple tag issued by the certifying authority.

8. Certified Seed

- (1) Certified seed is the progeny of foundation seed or registered seed and must be so handled as to maintain such satisfactory genetic identity and purity as the certifying authority may prescribe.
- (2) Certified seed shall be identified with a blue tag issued by the certifying authority.
- (3) Seeds reproduced from certified seed shall not be eligible for certification under these regulations.
- (4) Notwithstanding sub-regulation (3) of this regulation where the supply of foundation and registered seed is not adequate due to adverse environmental conditions or expansion of national agricultural targets the certifying authority may, for the purposes of maintaining adequate seed supply approve the certification of seeds reproduced from certified seeds; provided that the genetic purity of the certified seed is not altered.

9. Certification of Crop

- (1) No crop varieties shall be eligible for certification unless such crop varieties are approved by the Committee.
- (2) Where certification is not granted in respect of a batch of seed all subsequent seed increases from that batch of seed shall not be eligible for certification under these Regulations.
- (3) Except with the prior approval of the certifying authority only one variety of the same crop species may be grown for purposes of seed production on a farm.

10. Approval for Production of Foundation Registered or Certified Seed

- (1) No grower shall undertake the production of foundation registered or certified seeds unless he applies in writing to the certifying authority for approval.
- (2) The certifying authority shall on payment of the prescribed fee by the grower issue a permit to that grower to whom it has granted approval to undertake the production of foundation, registered or certified seeds.
- (3) Subject to sub-regulation (2) of this regulation a grower shall be eligible for a permit if he has adequate farm equipment or the required acres of land to undertake the planting, cultivation, harvesting and processing of the crops.
- (4) Every grower shall isolate a seed field from other fields and crops in accordance with the minimum seed standards prescribed in the schedule to these Regulations.

11. Certification Fee

Every grower shall pay for the certification of seeds a fee as established by the National Seed Committee.

12. Land for Seed Production

- (1) Certified seed shall be produced on a land which has not been used for the production of any other variety of the same crop or any crop of the same variety in respect of which no

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certification has been granted under these Regulations for such length of time as is specified in relation to that variety in the schedule to these Regulations.

- (2) Such land must be free from volunteer plants of the same crop and from all weeds whose seeds are impracticable to separate from the crop seeds.

13. Field and Bin Inspection

- (1) A field inspector may at the request of a grower, inspect every field intended for the production of foundation, registered or certified seeds at least once during the growing season and prior to harvesting.
- (2) A field inspector shall examine every field thoroughly to determine whether or not the particular crop meets the field requirements prescribed in relation to that crop in the schedule to these Regulations.
- (3) A field inspector shall submit to the certifying authority a detailed report on every field inspected by him.

14. Seed Treatment

Every grower shall treat all seeds planted for the purposes of seed production against pests and other plant diseases.

15. Isolation of Field

Every grower shall by a definite boundary separate any field used for the production of seeds for certification under these Regulations from any other field; except that in the case of cross-pollinated crops the field shall be separated in accordance with the isolation requirements in relation to field standards prescribed in the.....

Schedule to these Regulations in relation to these crops.

16. Roguing of Field

Every grower shall, before any field is inspected for purposes of certification rogue such field and remove therefrom any off-type plants and weeds; except that in the case of cross-pollinated crops off-type plants and weeds shall be removed before flowering of the plants or weeds.

17. Disease

Subject to the approval of the Committee, the Certifying authority shall for the purposes of seeds prescribe the tolerance of plant diseases.

18. Sampling

- (1) A representative sample of each batch of seed shall be taken for analysis by an inspector.
- (2) The inspector shall state in the analysis in respect of the sample of each batch of seed that the seed conforms to the seeds standards prescribed in the Schedule to these Regulations in relation to that seed.
- (3) Equal portions shall be taken from evenly distributed parts of the quantity of seeds to be sampled in accordance with the standards prescribed in the Schedule to these Regulations in relation to that seed.

- (4) Where the seeds are in bulk, they shall be sampled at least seven or eight times in uniformly distributed parts.
- (5) Where the quantity of seeds is ten bags or less each bag shall be sampled.
- (6) Where the quantity of seeds is more than ten bags stratified samples of the seed shall be taken.
- (7) A probe or trier shall be used in sampling seeds in bulk or in bags.

19. Tagging

- (1) No foundation, registered or certified seeds shall be sold by a grower unless such seed is tagged and sealed with the seal of the certifying authority.
- (2) The tagging and sealing of such seeds shall be done by a person authorized by the certifying authority so to do.
- (3) There shall be shown on each tag the following analysis data:-
 - (a) name of crop;
 - (b) variety of crop;
 - (c) code number of the grower;
 - (d) purity analysis;
 - (e) percentage of germination;
 - (f) batch number;
 - (h) treatment of seed (i.e. conspicuous label marked "POISON" and the name of chemical used, if any);
 - (i) date of expiry;
 - (j) certificate number of Inspector

20. Acceptance of new crop or plant varieties

- (1) New crop or plant varieties submitted by plant breeders to be entered in the seed certification programme must be submitted to the National Seed Committee with a complete varietal description for identification and recommended regions of adaption for production.
- (2) New crop or plant varieties shall be tested for yield, survival, disease reaction and other important characteristics in comparison with standard commercial varieties of such crop or plant, using experimental techniques that ensure valid measures of differences and their significance.
- (3) Each performance test shall consist of not less than three replicate of each selection and all entries shall be selected at random from each crop or plant varieties.
- (4) Each performance test shall include for comparison not less than three competitive crop or plant varieties or selection thereof.
- (5) The result of such performance test shall be reviewed each year by the Committee.
- (6) A report on such performance test shall be lodged with the certifying authority at the end of every year.
- (7) No new crop or plant variety of any seed shall be approved for certification under these Regulations unless it is superior in quality to existing commercial varieties of that crop or plant in one or more characteristics important for that type of crop or plant and is at least satisfactory in other major requirements.

21. Authority to Change Standards

The schedule of Crop Standards of these Regulations will be reviewed periodically by the National Seed Committee and the minimum standards may be adjusted if it is deemed desirable. Any change in standards must be accompanied by newly published rules for the crops involved.

22. Interpretation

In these Regulations:-

"batch of seed" means a quantity of seed, each portion of which is within reasonable limits uniform with respect to quality, purity, germination, variety and types "certifying seed" means any seed in respect of which certification is granted under these Regulations; "certifying authority" means the Ghana Seed Inspection Unit of the Ministry of Agriculture;

"Committee" means the National Seed Committee; "grower" means a person authorized to produce certificated seed;

"inert matter" includes straws, stems, ears, leaf, chaff and dirt; "tolerance" means an accepted level of infection, contamination or damage;

"volunteer" means the plant produced by seeds left in the field during a previous cropping.

The Seed Inspectorate Service

a. Background

It is appropriate to look at some alternative concepts for seed inspection, certification and regulatory services. A Seed Regulatory branch, usually called the official seed testing laboratory, is most often a public-sector, government operated agency with responsibility for testing seed produced and offered for sale within a geographical region. This concept can be adopted to a country-wide program in which case it would be organized at the national level. In implementing the concept, a seed testing laboratory is established centrally for the sole purpose of performing quality evaluation tests, such as seed moisture determination, purity and germination tests, weed seed contamination, and other tests deemed necessary. In regulatory control work, seed testing laboratories are governed by seed laws and regulations which provide detailed specifications of seeds of various crops and set forth guidelines and procedures for standardizing seed quality. In regulatory control testing, there is no field inspection, only laboratory evaluations to ensure that seed has been properly labeled and is represented fairly to the consumer. This is frequently called "TRUTH-IN-LABELING". The laboratories receive seed samples either from seed inspectors or agencies for testing and quality evaluation. National labs also check imported seed for proper standards, and for insect or disease infestation.

Under a scenario whereby seed testing laboratories perform only quality tests, some provision must be made to provide inspectors to go out into the commercial seed trade to take seed samples. Here again, these inspectors are usually provided for by the government agency along with their other inspection services. These individuals do not physically inspect seed production fields but merely visit seed outlets and take samples of seed which is already in commercial channels. The samples are either sent to the official regulatory laboratory. Thus, these two activities usually make up the official governmental testing and regulatory services provided to the overall seed program.

Yet another facet of a seed program is that of seed certification. Ghana can set up a certification program which inspect and sample just that portion of seed which is being certified. Seed Certification means progeny verification (pedigree) through a limited generation system of seed multiplication. The agency operates independently within government and has the authority to enforce the rules and regulations established for seed certification. It is viewed by clients as an unbiased official agency accepting or rejecting seed lots solely on the merits of quality standards. This, means that there can be both certified and non-certified seed passing in commercial markets. Certification verifies regulations and quality standards under the certification system; whereas, non-certification implies standards applicable to all seeds in the market place. Bear in mind that seed laws and regulations govern all seed - certified and non-certified - while certification regulations apply to only certified seed. Over time as Ghana's seed industry develops it is conceivable that the certification program organized within

a growers cooperative, and is usually voluntary to those persons (agencies) capable of producing very high quality seed. The cooperative serves as a certifying agency only at the discretion of the government. Growers records of crops, acreages and class of seed produced are maintained in the office, while the inspectors visit the production farms to verify isolation, absence of weeds and off-type plants and inspect equipment and storage for complete cleanliness. This is a service oriented program paid for by seed producers who participate in the program.

b. The Ghana Seed Inspection Unit

The team was briefed on the need and role of the new seed inspection program. It appears that the GOG plans to revive the Seed Inspectorate (GSIU) concept, developed in the early days of MIDAS I. Under these circumstances caution is recommended to direct this agency's scope of activities and organizational structure. As currently organized it appears that yet another massive governmental agency will be created with its traditional headquarters in Accra and widespread regional offices, accompanying staff, equipment and vehicles which the GOG cannot adequately support. The concept is based on assumptions that we regard as tenuous at best. We believe that additional work is needed to develop a model more suitable to Ghana's needs and economic situation.

The organizational concept which has emerged in Ghana is one that mandates the Seed Inspectorate (GSIU) to perform a combination of duties: (1) on site field inspections to ensure proper production, harvesting and handling techniques; (2) sampling seed at production sites and distribution centers for quality evaluations; and (3) laboratory testing to establish quality standards. If, in fact, these are the basic functions of the Inspectorate, then one can safely predict its demise from redundant staff and high cost operations given the relatively limited scope of seed activities in Ghana over the next 5 to 10 years. The Inspectorate is based on assumptions of complex operations in seed certification throughout the country. GSC performance to date clearly demonstrate that under the best circumstances operations will be limited and the number of seed distributors will include primarily GSC and the Grains and Legumes Board.

An apparent view-point held by a number of Ghanaians in the current seed program concerning the role and effectiveness of a seed inspectorate (GSIU) should be clarified. Of those agencies (persons, farmers, CRU, GFRUP, GSC) interviewed, the general opinion is that the formation of a seed inspectorate (GSIU) will almost immediately resolve some of the major problems facing the seed program today, e.g., GSC will be free from testing its own seed, seedgrowers (and other consumers) will be assured high quality seed without mixtures, Ejura Farms will produce consistently high quality seed, CRU and CGACP will have its Breeder Seed multiplied successfully, and various imported seed supplies will be tested for quality and pest contamination. While all of these aspects are laudable objectives, the mere formation of a Seed Inspectorate will not perform miracles nor will it be a paragon. Proper training and motivation, adequate equipment and facilities and sufficient mobility are essential to effectively implement a seed inspection - regulatory program. We believe that until these same problems are resolved within the seed company and Ministry departments, the chance of resolving them

in a new seed inspectorate department are dim. We believe that the seed inspection service as currently conceived will not work within the current Ghana context. Something more modest, more focused and less ambitious is called for if the unit is to be sustainable.

c. An Alternative Model

Given the Ministry's seed certification experience over the past decade, we agree that the time for a seed inspection service is long overdue. It was not fair to the company or to producers to expect GSC to act as both distributor and certifier of seed. However, under the circumstances it did as well as could be expected particularly with the establishment of a seed committee.

The scope of the seed inspection service should be based on realistic assumptions of its tasks and the results expected from its efforts. In the case of its scope of work, we believe the seed inspection service should be mandated at the outset to, (1) inspect seed growers plots just before harvest by the farmer to ensure uniformity of crop size, disease free stand and verify varietal integrity, (2) sample tagged seed at distribution points for laboratory results and (3) issue official certification tags to seed distributors with specifications inscribed on tags. Based on an estimated 60 to 70 seed growers throughout the nine regions, a regional inspector needs to concern himself with less than one dozen farms, a task easily handled by one person during the 30 to 40 day harvest season. The number of sample of seed may vary but in no case do we foresee more than 5000 samples per annum for the laboratory. Again, this work load will tend to fall within a 90 day period following harvest.

The seed laboratory should be made part of an existing laboratory in a central location in the country. Such a lab will be utilized 4 to 6 month per annum. In fact, the Ministry should determine what seed inspectors and lab worker will do for one half of the year. This kind of work tends to be time specific and will not require full time persons to properly carry out the work at the outset. In time, the responsibility of the seed inspectorate service will probably expand to cover crops other than maize and rice. This would then necessitate increasing staff and expanding laboratory facilities, probably with the use of an additional lab in a second location in the country.

The job of determining the most cost effective model for Ghana is highly technical, therefore, the above example is only one of a number of options. The team recommends the consultancy of an expert to assist the Ministry of Agriculture with its review of the Inspectorate Service.

GHANA SEED COMPANY
RESEARCH ACTIVITIES FOR 1985
BY DR. V.K. Ocran

MULTIPLICATION OF MAIZE BREEDER'S SEED MATERIALS:

The Research Division continued the major operation of multiplying breeder's seed materials received from the Crops Research Institute in Kumasi. The following information on the varieties is noteworthy:

INCREASES OF BREEDER SEED MATERIALS IN 1985:

	VARIETY	MATURITY PERIOD	LOCATION	ACREAGE	YIELD (BAG)
1.	La Posta	120 days	Ejura	20	25
2.	Dobidi CRI 1	120 "	Logba	40	97
3.	Santa 2	95 "	Logba	12	15
4.	Aburotia CRI 1	105 "	Okyareko	25	56
5.	Kwanzei CRI	95 "	Nyankpala	5	25
	<u>Total</u>	-	-	102	48

The drought which occurred in May of 1985 at Ejura and Logba drastically reduced maize yield in these locations.

PRODUCTION AND MAINTENANCE OF RICE SEED:

This activity was carried out at the Company's research station at Mile 38, near Kpong. Two varieties namely IR 3273 and IR 42 were multiplied on an area of 6 acres. A total yield of 90 bags (200 lb per bag) was obtained.

INTRODUCTION OF BREEDER'S SEED - RICE:

The following three new rice varieties were received from IRRI in the Philippines as breeder's seed:

IR 42 - 10 kg.
 IR 64 - 1 kg.
 IR 36 - 1 kg.

These are high quality rice varieties which are being tested under irrigation of Mile 38 Research farm.

COMPEX INTERNATIONAL TRIALS:

There were joint trials in which IITA in Ibadan, Nigeria provided several compea varieties for evaluation and use by national programmes and other institutions.

The compea improvement programme was grouped into the following three yield trials:

1. Extra-early cowpea International trial - 10 Entries
2. Medium maturity cowpea International trial - 20 Entries
3. Bruchid resistant cowpea International trial - 10 Entries

Entries in the trials were elite lines of cowpeas identified or developed in the breeding programme of IITA and other locations.

These trials were conducted at Mile 38 and varieties have been identified which are high yielding and have high level of resistance to several diseases and insects. Among these may be mentioned the following:

1. Extra-early (55 - 65 days to mature)

1. IT 82D - 812
2. IT 83S - 850
3. IT 83S - 862
4. IT 83S - 855
5. IT 82D - 889
6. Anontin erect (Local)

2. Medium Maturity (70 - 80 days)

1. IT 83S - 852
2. IT 83S - 871
3. IT 83S - 979
4. IT 82D - 511 - 3
5. IT 83S - 860
6. IT 82D - 875
7. IT 82D - 952
8. IT 82D - 699

3. Bruchid Resistant

1. IT 82D - 897
2. IT 82D - 453 - 2
3. IT 82D - 544 - 4
4. IT 82D - 1137
5. IT 83D - 239
6. Anontin erect (Local)

Production and Maintenance of Local Vegetable Seeds:

This is an on-going programme in which seeds are extracted from local vegetables such as pepper, okro, garden eggs and tomatoes with desirable yield and other agronomic characters for multiplication. Seed finally extracted from these increases are distributed to farmers.

December 1985

CURRENT STRUCTURE OF GHANA SEED COMPANYA. The Company Charter

The charter of regulations of Ghana Seed Company Limited (a private company limited by shares) was obtained the day before the team's departure. Under Directors it says the number of directors, "not being less than two or more than five....". The present Board of Directors is composed of 4 directors. (See below)

A quorum of 5 members is necessary for any resolution, any number less than 5 allows for only discussion.

The minutes of the Board meetings are recorded by a person designated as Board Secretary. The Managing Director, also a board member, is informed officially of Board decisions and acts accordingly.

A calendar of yearly board meetings drawn up at the beginning of the year and meetings are rotated to different locations in the country so board members can become better acquainted with the seed operations. This also allows visits to local politicians where good public relations can be established.

Under article 8(c), the company is prohibited from making any invitation to the public to acquire any of its shares or debentures.

B. Board of Directors - Ghana Seed Company Limited

<u>Name</u>	<u>Background</u>
1) Professor E.V. Doku Faculty of Agriculture University of Ghana Lagon	Plant Breeder Academician/Researcher
2) Mr. Josiah Wobli Managing Director Ghana Seed Company Limited Accra	Agronomist
3) Mr. K. Hussein Dison Regional Seed Grower Tamale	Private Farmer
4) Mrs. Victoria Owusu Ministry of Agriculture Accra	Administrator (Representative of Ministry of Agriculture)
5) Mr. S.K. Dodd Registered Seed Grower Bawjiasso	Private Farmer

- 6) Mr. S. Korang-Ameakoh
Plant Quarantine Unit
Ministry of Agriculture
Accra
Plant Pathologist
(Civil Servant)
- 7) Mr. S.K. Nforjio
Social Security Bank Limited
Accra
Banker
(Commercial Banking)
- 8) Mr. J.Y. Arthur
CDR Secretary
Ghana Seed Company Limited
Accra
Employee
(Worker Representative)

C. Management Staff - Ghana Seed Company Ltd

- 1) J. Wobil
Managing Director
B.Sc. Agric. M.Sc. Agronomy, Cert
in Management, Civil Service
- 2) E. Blay
General Manager
B.Sc. Agric. M.Sc. Plant Pathology
Civil Service
- 3) O. Gyamerah-Amoako
Sales Manager
BA Exons
Private/Commercial Sector
- 4) V.K. Ocran (Dr.)
Research Manager
B.Sc. Agric. M.Sc. PHD Plant Breeding
Civil Service
- 5) A.A. Amihere
Quality Control Manager
b.Sc. Agric
Fresh from University
- 6) P.K. Poku
Production Manager
Diploma, Tropical Agric. Cert. in Seed
Technology, Civil Service
- 7) P.K. Hammond
Processing Manager
City & Guilds Tech. Cert. in Agric. Mach
National Diploma in Agric. Mach
Cert. in Seed Technology, Civil Service
- 8) E. Odei-Addo
Asst. Engineer
City & Guilds Ordinary Tech. Dip. Mech
Eng. National Diploma, Engineering,
Public Servant
- 9) P.M.T. Kitcher
Ag. Adm'n. Manager
B.Sc. (Hons) Agric
Civil Service
- 10) E.K. Bampoe
Internal Auditor
ASCA (Part 3), MBIM, MGIM, MICH
(Affiliate) Military,
Private/Public Service
- 11) E. Hosno-Owusu
Area Manager, Winneba
Dip. General Agric. National Dip. Trop.
Agric. Cert. Seed Tech., Civil Service
- 12) H.A. Nwank
Area Manager, Tamale
Dip. General Agric. National Dip. Trop.
Agric. Cert. Seed Tech., Civil Service.

- | | | |
|-----|--|--|
| 13) | J. Dalimidi
Area Manager, Bolga | B.Sc. Agric. Graduate Dip. Seed Tech.
Civil Service |
| 14) | T. Bonney
Area Manager, Kumasi | B.Sc. Agric MSc. (Agronomy)
Civil Service |
| 15) | J. Erzush-Nyenzah
Chief Accountant | FAUA, PCFA, AMBIA ICA (Ghana) Inter
Industry & Commerce |
| 16) | J.T. Okronipa
Sales Officer, Tamale | B.A. (Econs)
Private |
| 17) | E.E. Andoh | ACCA (Part ASB), IA (Part ASB), RSA
(Final) Industry & Commerce |
| 18) | S. Appiah
Sales Officer, Winneba | B.Sc. (Agric Econ)
Private Sector |
| 19) | A. Alhassan
Accountant, Tamale | ICA (Ghana) Final I
Private Sector |
| 20) | D.O. Agye
Accountant, Bolga | ICA (Ghana) Final I
Central Bank |
| 21) | G.T. Vandyke
Accounting Asst.
Kumasi | Dip. in Accounting
Private Sector |
| 22) | I.G. Kizel
Accounting Asst.
Winneba | Dip. in Accounting
Private Sector |

Note: management staff were transferred from the civil service.

Hiring practice and promotion policy:

-Top Management personnel is hired through

a) Advertisement in daily newspapers

b) Interview by an outside panel of a Ministry or a government agency; e.g. An Accountant will be interviewed by a panel from the Accountant-General and external conditions.

-For Middle management: interview by an internal team of top managers.

-All personnel are hired in Accra

-Independent sources indicate that skilled manpower is poor

Actual Hiring practices are different than those indicated officially.

Official promotional policy requires annual evaluations for senior managers.

-The evaluation form is reviewed by immediate supervisor.

-Middle Managers evaluation form is reviewed by Head of Department

-Field personnel are evaluated first by area manager and the evaluation form reviewed by a supervisor.

D. Sales Incentives

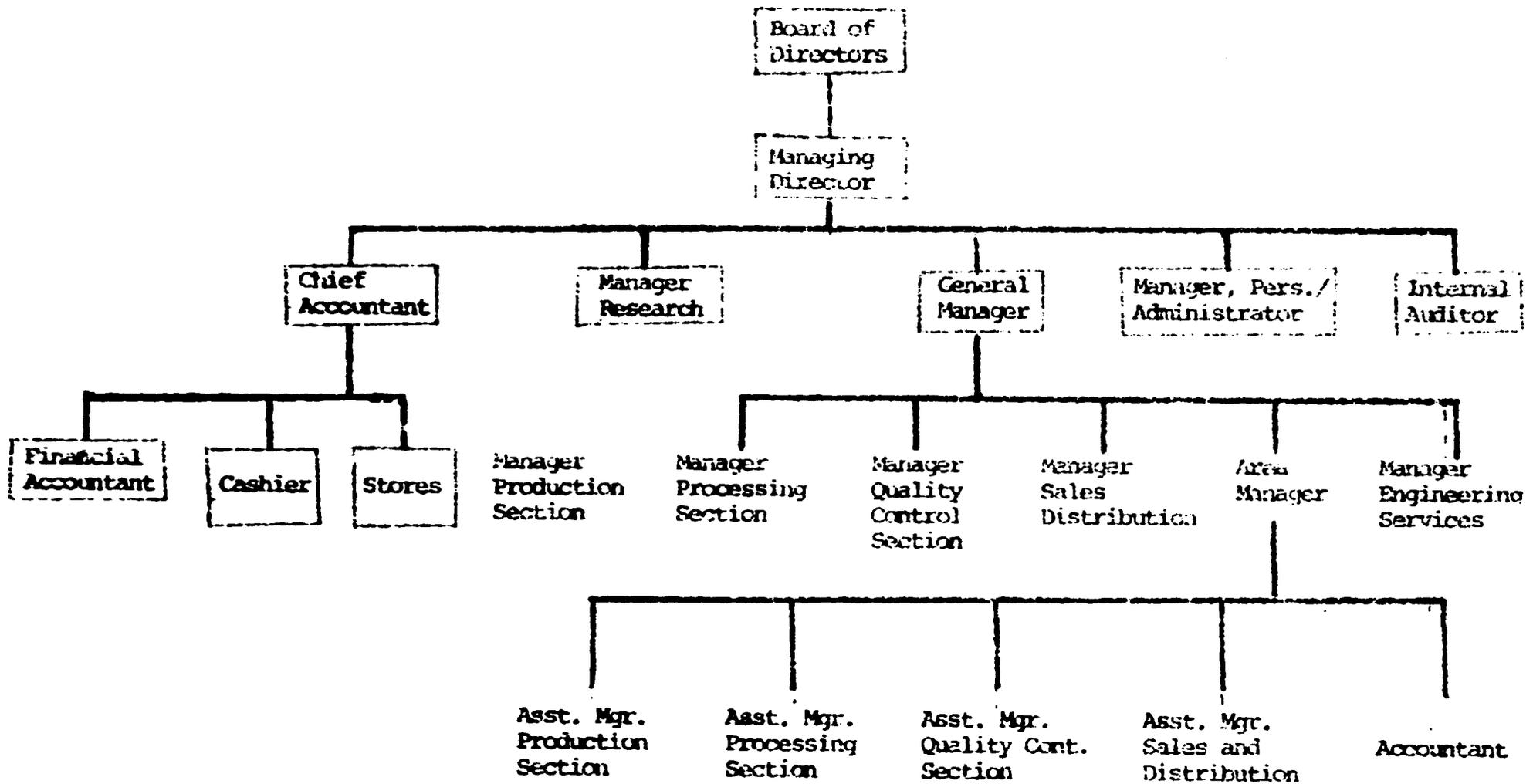
Company personnel manning sales kiosks in 1982/83 were paid a commission. However, it was discovered that superior sales were more a function of good locations of kiosk rather than a salesman's ability. The system was then discontinued but a new system is now being devised. No commission is paid to company sales personnel at the moment. Outside sales agents - commissions:

10% for vegetable seed;

5% for cereals.

Outside sales agents purchase seed from the company at a discounted price. The use of this system was confirmed in Kumasi.

CURRENT ORGANISATION CHART OF THE GHANA SEED COMPANY LTD.



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DISTRIBUTION NETWORKA. Area Depots

1. Accra
2. Winneba
3. Kumasi
4. Tamale
5. Bolgatanga
6. Ho

B. Sales Kiosks

1. Accra
2. Swedru
3. Koforidua
4. Kumasi
5. Sunyani
6. Mampong Ashanti
7. Ejura
8. Atebubu
9. Techiman
10. Tamale
11. Sekondi

C. Seed Agents

- | | | | | | |
|--------------------|---|----------------|------------------|---|-------------|
| 1. Accra |) | | 28. Cape Coast |) | |
| 2. Tema |) | | 29. Assin Foso |) | Central |
| 3. Ashiaman |) | | 30. Senya Beraku |) | Region |
| 4. Abokobi |) | Greater Accra | 31. Dunkwa-Offin |) | |
| 5. Ningo |) | | | | |
| 6. Anasaman |) | | 32. Takoradi |) | |
| 7. Madina |) | | 33. Axim |) | Western |
| | | | 34. Tarkwa |) | Region |
| 8. Koforidua |) | | 35. Half Asini |) | |
| 9. Somanya |) | | | | |
| 10. Senua |) | | 36. Goaso |) | |
| 11. Nsawam |) | | 37. Wachi/Nsokaw |) | Brong Ahafr |
| 12. Anartey |) | | 38. Kintampo |) | |
| 13. Abetifi |) | | | | |
| 14. Sege |) | Eastern Region | 39. Tapa |) | |
| 15. Ada-Foah |) | | 40. Offinso |) | |
| 16. Aburi |) | | 41. Agogo |) | Ashanti |
| 17. Mamfe |) | | 42. Kumasi |) | Region |
| 18. Kraboa-Coaltar |) | | 43. Joaso |) | |
| 19. Oda |) | | 44. Bekwai |) | |
| 20. Ahomosu |) | | 45. Obogu |) | |
| 21. Donkorkrom |) | | | | |
| 22. Asamankese |) | | 46. Damongo |) | |
| 23. Akim Techiman |) | | 47. Yendi |) | |
| 24. Tafo |) | | 48. Wa |) | |
| 25. Kibi |) | | 49. Navrongo |) | Northern |
| 26. Kade |) | | 50. Bawku |) | & |
| 27. Mpraeso |) | | 51. Bole |) | Upper |
| | | | 52. Elumbila |) | Regions |
| | | | 53. Salaga |) | |
| | | | 54. Tumu |) | |
| | | | 55. Lawra |) | |

- 56. Denu)
- 57. Ho)
- 58. Peki)
- 59. Sogakope) Volta
- 60. Kete Krachi) Region
- 61. Afio)
- 62. Kpanku)
- 63. Wuguta)

D. Mutual Marketing Plan

1. FASCOM (Upper Region) Ltd.
all Agric. centres in the Upper Region
2. FASCOM (Volta Region) Ltd.
all Agricultural centres in Volta
3. G.N.T.C.
all District capitals in Ashanti Region
4. APPLE & GOVA
Brong Ahafo Region
5. Ghanaian/German Technical Assistance Team
Northern Region.

Summary of Principal Conclusions
by
Price Waterhouse Public Accountants
on
The Ghana Seed Company (GSC)

As an adjunct to the Evaluation, the Public Accounting Firm, Price Waterhouse of Liberia, was retained to prepare a financial Management Evaluation of the Ghana Seed Company in November 1985. The objectives of the review were as follows:

- a) Financial viability of the Ghana Seed Company
- b) Options for change in existing organizational structure, and
- c) Extent of project's dependence on external resources including government subventions and borrowing guarantees.

Conclusions:

1. THE OPERATIONS OF THE COMPANY HAVE NOT BEEN CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE COMPANIES CODE OF GHANA; WE SAW NO EVIDENCE THAT ANNUAL GENERAL MEETINGS HAVE EVER BEEN HELD, ANNUAL RETURNS DO NOT APPEAR TO HAVE EVER BEEN FILED ETC. THE PRESENT REORGANISATIONAL STRUCTURE DOES NOT, IN OUR OPINION, CLEARLY DEFINE LINE AND STAFF AUTHORITY FOR DELEGATION OF RESPONSIBILITY AND FOR REPORTING AND MONITORING THE RESULTS OF THE EXERCISING OF THESE RESPONSIBILITIES.
2. THE BASIC ACCOUNTING RECORDS MAINTAINED AND THE RELATED PRACTICES ADOPTED COULD NOT BE EXPECTED TO SAFEGUARD THE COMPANY'S ASSETS FROM LOSS. NO REGISTER WAS KEPT TO RECORD THE FIXED ASSETS OF THE COMPANY, NEITHER WERE WE PRESENTED WITH ANY ACCOUNTING POLICY STATEMENT ON SUCH KEY AND FUNDAMENTAL ISSUES AS DEPRECIATION OF ASSETS, PHYSICAL VERIFICATIONS, RECOGNITION OF INVENTORY LOSSES, OBSOLESCENCE, RECOVERABILITY OF RECEIVABLE, ETC. IN THE ABSENCE OF THESE GUIDELINES WE ESTIMATE THAT TOTAL INVESTMENT IN THE COMPANY OF APPROXIMATELY 2140M, AT DECEMBER 1984 (COMPRISING 277M IN GHANA GOVERNMENT FUNDS 237M IN GOVERNMENT GUARANTEED BANK BORROWING AND 276M OF USAID FUNDING) MAY HAVE BEEN COMPLETELY LOST BUT NOT RECOGNISED AS SUCH BY THE ACCOUNTING SYSTEM.

3. THE CURRENT MARKETING SYSTEM ADOPTED BY THE COMPANY MEANS THAT IN PRACTICE LICENSED SEED GROWERS ARE IN COMPETITION WITH GSC AND ONLY SELL TO THE COMPANY WHAT THEY ARE UNABLE TO SELL DIRECTLY TO FARMERS. WE SAW NO EVIDENCE OF MANAGEMENT EFFORT TO RESOLVE THIS IMPORTANT WEAKNESS.

4. THERE WERE NO PROPER CO-ORDINATION AND CONTROLS OVER REVENUES AND EXPENDITURES BY EACH AREA ORGANISATION OR DEPARTMENTS OF THE COMPANY. NO CREDIBLE MANAGEMENT ACCOUNTING SYSTEM HAS EVER BEEN IMPLEMENTED AT GHANA SEED COMPANY AND HALF-HEARTED ATTEMPTS AT BUDGETARY CONTROLS WERE WOEFULLY INADEQUATE AS NO REPORTS ON VARIANCES AND DEPARTURES FROM ESTIMATES WERE MADE AVAILABLE TO US. THE RESULT WAS WHILST EXPENDITURES ESCALATED OUT OF CONTROL, LOSS OF REVENUE THROUGH LESS THAN IMAGINATIVE TRADING ACTIVITIES WAS ON THE INCREASE. IN SHORT SINCE 1982 THE COMPANY HAS BEEN LOSING MONEY THROUGH BOTH ENDS, I.E. IT LOSSES BOTH IN TERMS OF REVENUES AND EXPENDITURES.

GSC Foundation Seed Farms, acreage and production potential derived in the Amendment No. 1 to MIFAS II compared to actual acreage and production extracted from 3rd Annual Technical Report of EquiScience, Incorporated, March, 1985.

LOCATION (AREA)	MAIZE		RICE		CORN		SOPHORA		CUMULATIVE	
	ACRE	BAGS	ACRE	BAGS	ACRE	BAGS	ACRE	BAGS	ACRE	BAGS
WESTERN	150 (120)	900 (250)					2	10	18 (11.5)	8000 (1.5)
EL PASO										
Bosque	48	240							5	1000
Sjara	120	480							4	800
	168 (102)	720 (135)							9 (2)	1800 (1.4)
TAMU										
Mysakpala	20	120								
Nabogo	20	120			5 (5)	30 (15)				
Rpono	20	120	100	600			5 (2)	15 (6)	- (0)	- (3.5)
	60 (65)	360 (120)	200	1600						
			300 (260)	2400 (2182)						
SOLICITADA										
Naria										
Van	27	135	200 (270)	2000 (461)						
Daba	10	50								
Toro	8	40					5 (4)	25 (12)		
	45 (10)	225 (10)			9 (3)	72 (15)				
LOGON										
Logba	100	700								
Asilama	14	70								
Rpono										
	114 (100)	770 (271)								
TOTAL ACREAGE	537 (307)	2975 (784)	500 (530)	4400 (2643)	14 (8)	102 (30)	12 (6)	50 (18)	19 (21.5)	5800 (6.4)

NOTE: Number in parentheses are actual acreages and production extracted from E.I. Technical Report, March, 1985.

ANNEX 14A

1985 COST OF PRODUCTION PER ACRE/BAG
CERTIFIED SEED MAIZE
NORTHERN SECTOR

<u>ITEM</u>	<u>COST PER ACRE</u>
Land Rent	50.00
Land Clearing over 5 years	100.00
Ploughing	1,100.00
Harrowing (double)	1,000.00
20Ibs Seed	400.00
Planting 4 mandays at €80.00 each	320.00
Fertilizer - 2 bags 15-15-15 @ €450.00 each	900.00
Fertilizer - 1 bag Sulphate of Ammonia @ €305.00	305.00
Carting of 3 bags of fertilizer @ €40.00	120.00
Fertilizer application 3 mandays @€90.00	240.00
Weed Control 2 litres/Acre @ €436.00/Lit.	972.00
Rogueing 1 manday @ €60.00	60.00
Harvesting and gathering 5 mandays @ €60.00	300.00
Dehusking and selection 4 mandays @ €150.00	600.00
Drying - 3 mandays @ €60.00 each	180.00
Depreciation on sheds, barns and tools	200.00
<hr/>	
Sub Total I	6,847.00
5% Contingency	342.35
<hr/>	
sub Total II	7,189.35
Interest on Bank loan 15% (1/2 of year)	647.04
<hr/>	
Sub Total III	7,836.39
Average yield/acre 6 bags	
Guaranteed minimum price/bag (220Ibs)	979.54
Management and supervision 5%	48.97
Profit margin 20%	195.90
Grower incentive 10%	97.95
Producer price/bag of 220 Ibs	1,322.36
Recommended producer price (range) €1,500 - €2,000	

1985 COST OF PRODUCTION PER ACRE/BAG
CERTIFIED SEED MAIZE
NORTHERN SECTOR

<u>ITEM</u>	<u>COST PER ACRE</u>
Land Rent	120.00
Land Clearing	1,250.00
Ploughing (once)	1,500.00
Harrowing (double)	1,500.00
Seed 20 lbs/Acre	480.00
Planting 4 mandays @ \$100.00 each	400.00
Fertilizer 15-15-15 2 bags @ \$440.00 each	880.00
Fertilizer Sulphate of Ammonia 1 bag @ \$295.00	295.00
Transporting 3 bags fertilizer	200.00
Fertilizer application 3 mandays @ \$100.00	300.00
Hand weeding 7 mandays double	1,400.00
Regrowing 1 manday @ \$100.00	100.00
Harvesting and collection 5 mandays	500.00
Dehusking and selection 4 mandays	400.00
Depreciation on barns and tools	800.00
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Sub Total I	10,125.00
5% contingency	506.25
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Sub Total II	10,631.25
Interest on Bank Loan 18% (3/4) year	1,435.21
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Sub Total III	12,066.46
Average yield per acre 8 bags	
Guaranteed minimum price per bag	1,508.30
Management and supervision 5%	75.41
Profit margin 20%	301.66
Grower incentive	150.83
Producer price per bag of 220 lbs	2,036.20
Recommended producer price	2,200.00

1985 COST OF PRODUCTION PER ACRE/BAG
CERTIFIED SEED RICE
NORTHERN SECTOR

<u>ITEM</u>	<u>COST PER ACRE</u>
Land Rent	50.00
Land Clearing (over 5 years)	200.00
Ploughing	1,100.00
Harrowing (double)	1,000.00
Seed 70 lbs @ ₱3,000.00/140lbs	1,500.00
Fertilizer 15-15-15, 2 bags @ ₱450.00 each	900.00
Planting - Hand broadcast 2 mandays @ ₱60.00	120.00
Fertilizer 1 bag sulphate of Ammonia - ₱305	305.00
Application of fertilizer 3 mandays @ ₱60.00	180.00
Carting 3 bags of fertilizer @ ₱30.00 each	90.00
Carting 70 lbs seed @ ₱40.00 per 140 lbs	20.00
Manual weeding 10 mandays @ ₱80.00	800.00
Roguing - 2 mandays @ ₱60.00	120.00
Harvesting (a) Combining	1,000.00
(b) Bagging and sowing 10 bags	100.00
Depreciation of barns and tools	200.00
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Sub Total I	7,685.00
5% Contingency	384.25
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Sub Total II	8,069.26
Bank interest 18% (1/2 year)	726.23
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Sub Total III	9,795.48
Average yield per acre @ bags	1,099.43
Management and supervision (5%)	54.97
Profit Margin (20%)	219.88
Grower Incentive (10%)	109.94
Producer price	1,484.22
Recommended Price/bag (range)	2,200.00

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