



EXPERIENCE, INCORPORATED

1930 DAIN TOWER • MINNEAPOLIS, MINNESOTA 55402 U.S.A.

PD-AAP-078

ian: 34008

641-0102 / 52

SECOND ANNUAL TECHNICAL REPORT
SEED MULTIPLICATION - MIDAS II

Contract AFR-0102-C-00-2003-00

February, 1984

EXPERIENCE, INCORPORATED 480
Minneapolis, Minnesota 55402

TABLE OF CONTENTS

| | Page |
|---|------|
| I. INTRODUCTION AND OVERVIEW OF SEED PROJECT ORRIS H. SHULSTAD - CHIEF OF PARTY/TECHNICAL COORDINATOR | 1 |
| II. GHANA SEED COMPANY LIMITED | 6 |
| A. General Situation Report | 6 |
| B. Fire Damages | 7 |
| C. Ghana Seed Company Management Staff | 8 |
| D. Management Strategies | 11 |
| E. Fiscal Administration | 12 |
| F. Fiscal Projections | 13 |
| G. Balance Sheets | 13 |
| H. Board of Directors | 16 |
| I. Ghana Seed Company Headquarters | 17 |
| J. Ghana Seed Company Personnel | 17 |
| K. Marketing | 18 |
| L. Research | 20 |
| III. SEED PROCESSING CENTERS | 21 |
| A. Introduction | 21 |
| B. Winneba Processing and Drying Operations | 22 |
| C. Other Seed Company Branch Processing Operations | 23 |
| D. Counterpart Activities | 24 |
| E. Winneba Seed Center Construction | 24 |
| F. Status of Construction of Winneba Structures | 27 |
| G. Technical Coordinator's Visits to Ghana Seed Company Branches in 1983 | 30 |

TABLE OF CONTENTS

| | Page |
|---|------|
| IV. ISSUES TO BE ADDRESSED BY USAID AND THE GOVERNMENT OF GHANA | 31 |
| A. The Revised Implementation Plan | 31 |
| B. Continuation Versus Termination of Experience, Incorporated Contract | 32 |
| C. Replacement Equipment and Vehicles | 32 |
| D. Technician's Vehicle Replacements | 32 |
| E. Project Procurement | 32 |
| F. Participant Training | 33 |
| V. PLAN OF WORK FOR 1984 - TECHNICAL COORDINATOR | 34 |
| A. Urgent Priority | 34 |
| B. Other | 35 |
| VI. SEED QUALITY CONTROL - WILLIAM HALL - SEED QUALITY CONTROL SPECIALIST | 37 |
| A. Introduction | 37 |
| B. Accomplishments | 38 |
| C. Difficulties and Problems Encountered | 42 |
| D. Program for the Coming Year | 43 |
| E. Issues to be Addressed by USAID and the GOG | 46 |
| F. Acknowledgements | 47 |
| VII. SEED PRODUCTION - SHELDON SANDAGER - SEED PRODUCTION MANAGEMENT CONSULTANT | 49 |
| A. Introduction | 49 |
| B. Duties | 51 |

TABLE OF CONTENTS

| | Page |
|---|------|
| C. Foundation Seed Farm | 51 |
| D. Certified Contract Growers | 57 |
| E. Fertilizer, Herbicides, and Pesticides | 62 |
| F. Training | 64 |
| G. USAID Grant Funded Farm Equipment | 66 |
| H. Summary and Conclusions | 71 |
| I. Work Plan for Next Year | 72 |

LIST OF TABLES

| | Page |
|---|------|
| TABLE II-1. GHANA SEED COMPANY LIMITED OPERATING RESULTS FOR THE PERIOD JULY 1, 1981 TO JUNE 30, 1982 | 14 |
| TABLE II-2. GHANA SEED COMPANY LIMITED OPERATING RESULTS FOR THE PERIOD JULY 1 TO DECEMBER 31, 1982 | 15 |
| TABLE II-3. GHANA SEED COMPANY PERSONNEL | 18 |
| TABLE II-4. SALES BY BRANCHES | 19 |
| TABLE III-1. PROCESSING REPORT - 1982 CROP | 21 |
| TABLE III-2. PHASE I CONSTRUCTION | 26 |
| TABLE VI-1. NUMBER OF SEED QUALITY ANALYSES MADE IN GHANA SEED COMPANY LABORATORIES FROM JANUARY 1 - NOVEMBER 1, 1983 | 41 |
| TABLE VI-2. WORK PLAN SCHEDULE FOR SEED CONSULTANT IN 1984 | 45 |
| TABLE VII-1. GHANA SEED COMPANY LIMITED FOUNDATION AND CERTIFIED SEED PRODUCTION, 1980-1983 | 50 |
| TABLE VII-2. FOUNDATION SEED PRODUCTION BY GHANA SEED COMPANY FARMS | 52 |
| TABLE VII-3. RAINFALL RECORDED AT THE OKYEREKO DAM SITE | 53 |
| TABLE VII-4. CERTIFIED UNPROCESSED SEED PROJECTIONS-1983 CROP YEAR | 57 |
| TABLE VII-5. SEED PRODUCTION BY CONTRACT GROWERS | 61 |
| TABLE VII-6. FIELD EQUIPMENT USAID SUPPLIED | 67 |
| TABLE VII-7. TRANSPORTATION VEHICLES SUPPLIED BY USAID | 69 |

LIST OF FIGURES

| | |
|--|----|
| FIGURE II-1. ORGANIZATIONAL CHART - GHANA SEED COMPANY | 9 |
| FIGURE II-2. MAP OF GHANA - LOCATION OF ALL GHANA SEED COMPANY UNITS | 10 |

6169A

W

SECOND ANNUAL TECHNICAL REPORT
SEED MULTIPLICATION - MIDAS II
CONTRACT AFR-0102-C-2003-00

- 1983 -

1. INTRODUCTION AND OVERVIEW OF SEED PROJECT
ORRIS H. SHULSTAD - CHIEF OF PARTY/
TECHNICAL COORDINATOR

The Second Annual Technical Report is an on-going description of the Ghana Seed Multiplication Project activities of the above designated Contract. Experience, Incorporated provided the Technical Services of three specialists listed in the First Annual Technical Report, dated April, 1983. References are therefore made to the First Annual Report for considerable background information which need not be repeated.

A brief background is required to update the current situation. Experience, Incorporated has provided technical services to the Seed Multiplication Project since early 1977. Services have been provided through the United States Agency for International Development (USAID) in Ghana, Africa, initially to the Seed Multiplication Unit of the Ministry of Agriculture (MOA). In August, 1979, the public sector SMU-MOA was inaugurated as a private sector Ghana Seed Company Limited, (GSC).

The Seed Multiplication Unit was already a national entity with headquarters in Accra and branches at Winneba, Ho, Kumasi, Tamale, and Bolgatanga. A few satellite stations were used to augment seed production requirements. Gross capacities and capabilities were very limited when compared with the country's seed needs for maize, rice, groundnuts, sorghum, and millet seeds. Almost no maize seed drying capability existed. High tropical humidities year round ranging well into the upper two-thirds of Ghana, were destructive to the viability of maize

seed. Storage and seed processing capacities were limited. Therefore, the initial project objectives were to improve and increase the capabilities over existing facilities. The infrastructure of a seed growers group existed in 1977, and the numbers were easily increased as the seed company has been able to handle a greater volume of production.

Government of Ghana (GOG) financial support terminated mid-1982, except for capital improvements, some farm machinery, vehicles, and office equipment and supplies. This support became very limited, except for capital improvements, as the economy would permit only limited foreign exchange allocations.

Management of the Ghana Seed Company has remained stable. Many of the top management have worked in their positions since the early sixties. Performances by key officers improved immensely after becoming a private sector seed company.

Contributions by USAID to Ghana Seed Company developments have had a positive impact on successes and operations of the Ghana Seed Company. The Managing Director is quick to point out the contributions made by the United States government in making the Ghana Seed Company successful. As of August, 1983, the United States government had provided approximately \$7.4 million through AID fundings, both Grant and Loan. An on-going program of assistance is needed until the Ghana Seed Company can become wholly self-endowing, but a resolution of foreign exchange problems will determine when this will be achieved.

Three major constraints have exerted pressure on the fledgling Ghana Seed Company in 1982 and 1983:

- The economic instability of the country has delayed construction of the first seed plant at Winneba.

- Severe droughts over much of Ghana the last several years have decreased total production of much needed food grains, as well as seed production prospects. Yields per acre or hectare have been low. Total units to sell as a base for seed company livelihood have dropped necessitating an increase in seed prices to avoid the risk of company collapse. Ghana Seed Company management has overcome the problem temporarily.
- A "freeze" on procurement for nearly seven months affected the availability of vegetable seeds to be sold by the Ghana Seed Company to help feed the nation. However, in the last two months of 1983, the freeze was relaxed and funding reopened. A total of \$750,000 was provided by USAID in November to fund procurement.

Escalating food maize prices in the markets of the country created competition for the purchase of contract seed growers' production. The Ghana Seed Company management maintained flexible seed purchase prices and went above the market price in all branches of the company in order to keep seed coming in to the company.

Marked improvement in construction of the Phase I Winneba Seed Plant was evident in 1983 with an approximate 70 percent completion. USAID agreed to procure scarce construction materials to help ensure plant completion for the 1984 seed maize crop.

The Production Management Consultant focused most of his efforts on keeping foundation seed farm machinery functional, training operators and mechanics, and dealing with contract seed growers at all Ghana Seed Company branches.

The Quality Control Consultant strengthened seed testing practices at all locations through extensive training, guiding inspection personnel on field inspections, and conducting research in insect control through use of various insecticides.

Equipment installations at the Winneba Seed Plant were begun. The column dryer was about 75 percent erected. Seed processing building equipment was being installed. An electrical substation was completed, equipment installed, and power brought where needed, including power to the four additional wagon dryer units made operational at the new site.

With USAID funding and waiver procurements, six Leyland 10-ton trucks, two Datsun crew cab pickups, and ten conventional Datsun pickups were added to the Ghana Seed Company's transport fleet. Along with five Chevrolet trucks previously purchased, the transport capabilities of the Ghana Seed Company were greatly improved. Transport deficiencies had been responsible for failure to obtain seed from growers and hampered sales and distribution efforts. Eight motorbikes were also added to permit daily visitations to seed growers' farms to monitor production and harvest activities.

Sales and distribution outlets were expanded throughout the country by aggressive sales efforts of the Sales Manager and his staff. Ghana Seed Company kiosks, sales agents, privately owned kiosks, and sales outlets have sprung up throughout Ghana. Advertising and public relations activities were increased to stimulate public awareness of the seed company and its seeds. 1983 was a successful year for the Ghana Seed Company despite all of its problems.

Project Administrator, Duane A. Eriksmoen, visited Ghana from April 20 to May 2, 1983 to review the project with USAID, Ghana Seed Company, and the Experience, Incorporated team. During the year, Mr. Eriksmoen accepted an assignment on the field team of an agricultural development project the company is conducting under a contract with the USAID Mission in Sudan. Filling the vacancy was Mr. Kenneth E. Holt with backup assistance from Ms. Joy Kromschroeder. Mr. Holt is well known to the Managing Director of the Ghana Seed Company, having visited Ghana in 1976. Mr. Holt spearheaded the Tanzania Seed Project which commenced in 1968 and continued on into the early 1980s.

II. GHANA SEED COMPANY LIMITED

A. General Situation Report

Planned objectives, submitted in 1982, were delayed during 1983. These included improvements at two other Ghana Seed Company locations, Kumasi and Tamale. The Revised Implementation Plan, developed early in 1982, called for improvements in maize drying at Kumasi and rice seed processing at Tamale. Ghana Seed Company management hopes that these objectives will receive an early favorable consideration.

The supply of most vegetable seeds was depleted due to the "freeze" order in effect from April to late October. However, the purchase and expected arrival of vegetable seeds in time for the 1984 planting period provides new optimism.

Ordering of spare parts was also delayed during the freeze period. Some tractors and vehicles were deadlined for lack of spare parts. To complicate matters, shipments destined for Ghana were shipped to Lebanon and Cameroon, the former finally received in Ghana, the latter still sitting in Cameroon.

In November after funding became available again, the following orders were being processed:

1. Agro-Mechanic PIO/T
2. Vegetable seeds
3. Vehicle and farm machinery spare parts
4. Quality control laboratory supplies
5. Construction materials Winneba Phase I
6. Pellets for Winneba seed storage insulation fabrication locally
7. Replacement items for seed storage equipment destroyed by fire
8. Electrical cables and miscellaneous items for Winneba Seed Plant

B. Fire Damages

In early January, a fire at Winneba destroyed containerized seed storage conditioning equipment valued at \$110,000. A second fire razed the Kumasi seed storage building, severely damaging a maize sheller, Clipper 27 seed cleaner, seed dryer bins and dryer equipment, and a seed treater, as well as destroying an estimated 350 maxi bags of 1984 seed maize.

Replacement of the Winneba equipment through USAID funding under Loan is in process. Plans are being made to replace the Kumasi structure either by rebuilding or through procurement of a prefab metal structure under USAID Loan funding. Replacement of equipment at the Kumasi branch is also being considered by USAID.

Following the Kumasi fire, seed maize was diverted to the Winneba branch for drying, processing, and storage. The recently acquired trucks were instrumental in speedy transport of the seed, thus avoiding the risk of seed deterioration due to high moisture and high temperatures experienced during transport from the grower until dried at the Winneba facility. The Kumasi branch should be restored since the areas north of Kumasi hold a great potential for maize production for Ghana.

C. Ghana Seed Company Management Staff

The senior officers of the Ghana Seed Company now include:

| | | |
|---------------------|---|-------------------------------|
| Josiah Wobil | - | Managing Director |
| Ebenezer Blay | - | General Manager |
| P.K. Poku | - | Production Manager |
| John Erzuah-Nyenzah | - | Chief Accountant |
| P.M.T. Kitcher | - | Acting Administrative Officer |
| Dr. V.K. Ocran | - | Research Manager |
| Frederick Hammond | - | Processing Manager |
| Anthony A. Amihere | - | Quality Control Manager |
| O. Gyamera-Amoako | - | Sales Manager |
| E.K. Bampoe | - | Internal Auditor |
| R. Hesse-Owusu | - | Area Manager, Winneba |
| Henry Akanko | - | Area Manager, Tamale |
| Thomas Bonney | - | Area Manager, Kumasi |
| Lansagri Delmini | - | Area Manager, Bolgatanga |
| Alfred Ocloo | - | Area Manager, Ho |

Figure II-1 shows the organizational chart of the Ghana Seed Company. Figure II-2, Map of Ghana, shows locations of all Ghana Seed Company units.

FIGURE II-1. ORGANIZATIONAL CHART - GHANA SEED COMPANY

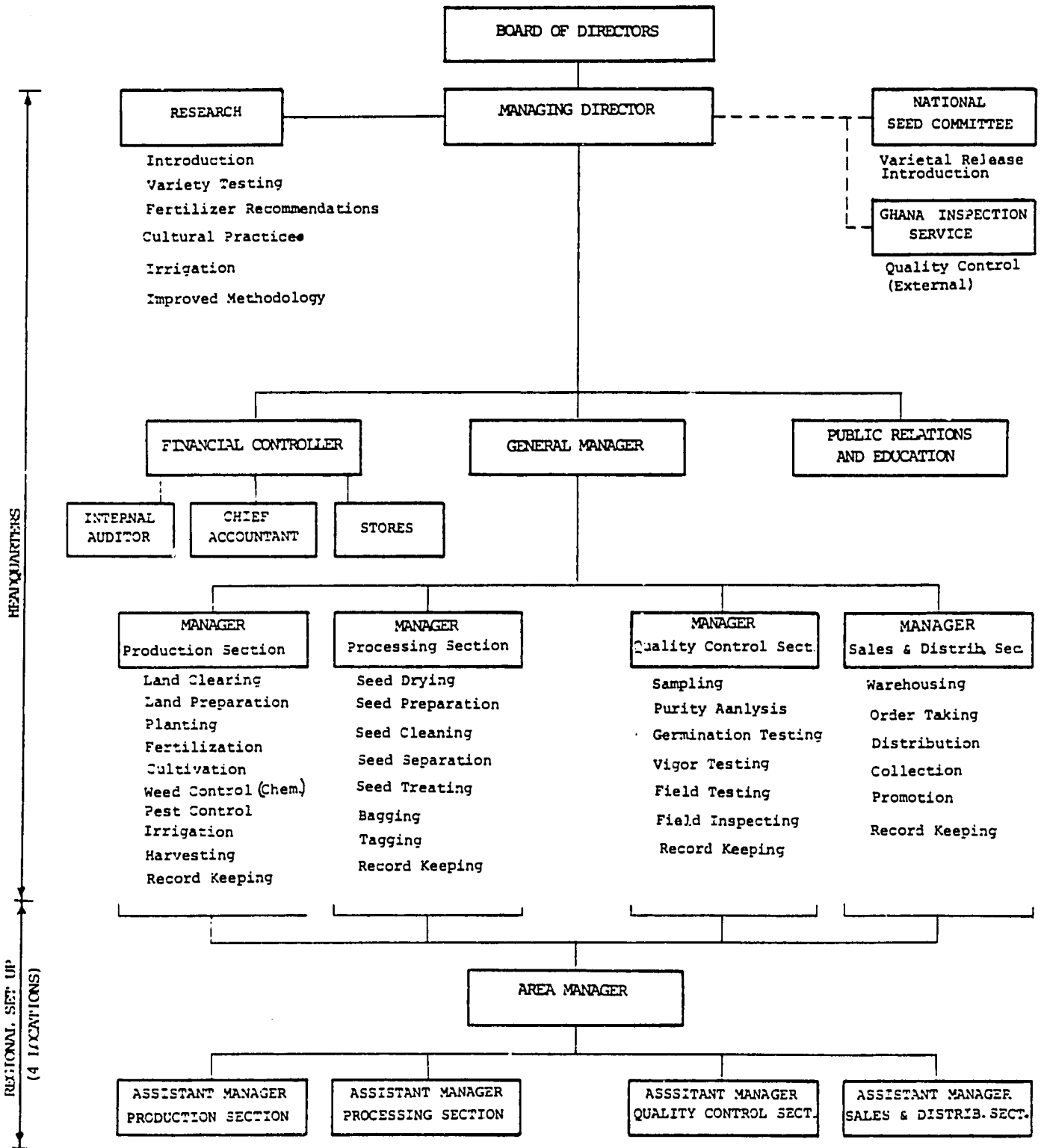
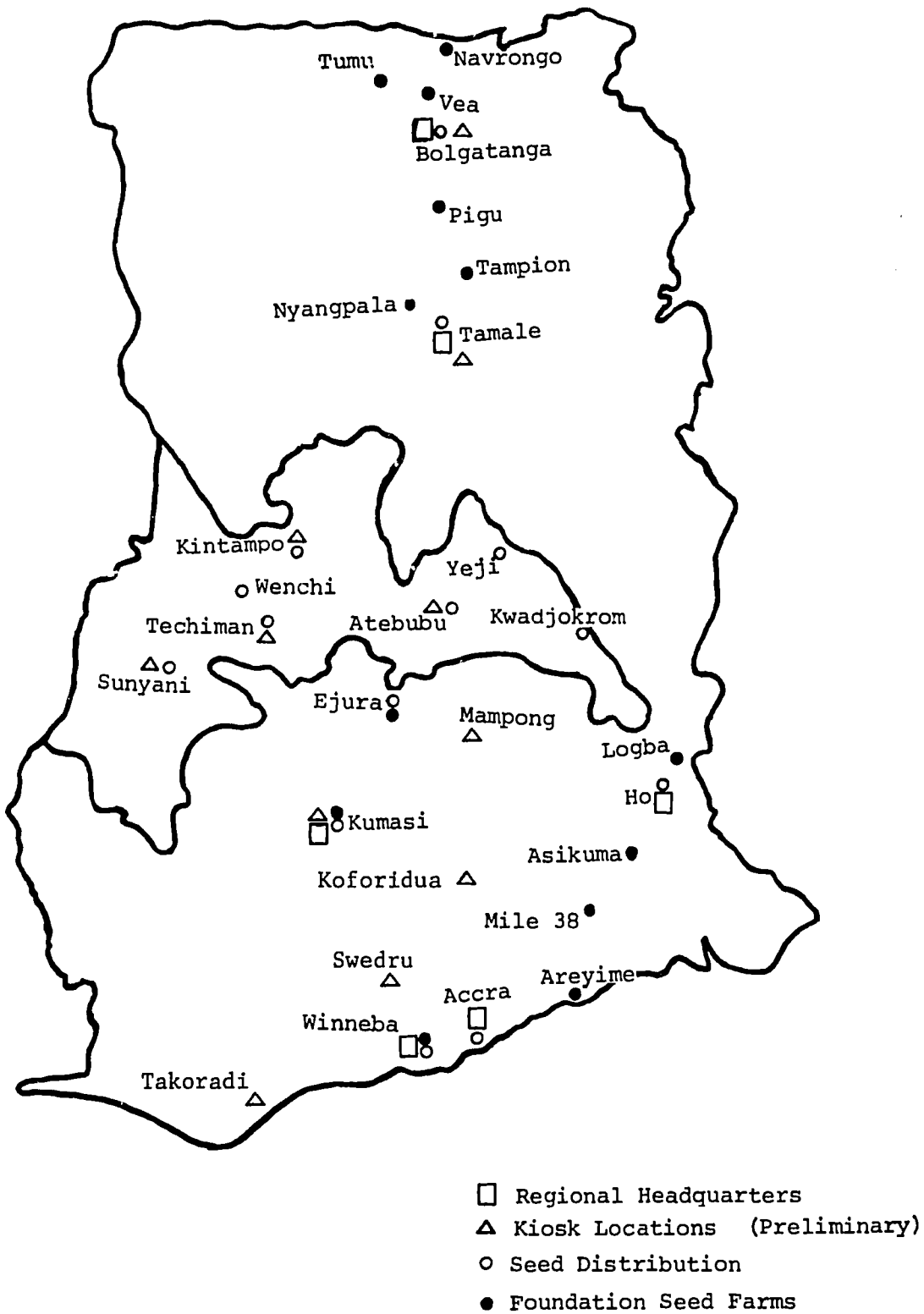


FIGURE II-2. MAP OF GHANA - Location of all Ghana Seed Company Units



D. Management Strategies

Techniques employed by Ghana Seed Company management to improve the effectiveness of managers and area staff include:

- Weekly staff meetings, submission of reports to the officer-in-charge on accomplishments of the past week, and presentation of a work plan for the week ahead (on Mondays). Headquarters publishes weekly staff meeting minutes.
- Annual Planning Conferences with all area managers in February to review the past year's performances, develop work programs, set basic and certified seed production goals for the coming year, review fiscal policy, and plan inputs for coming season. Published reports are distributed to participants.
- Mid-year meeting with area managers to review progress and conditions at all locations, and to make plans for upcoming harvest seasons. Published reports are distributed to participants.
- Weekly seed position reports by areas prepared by Internal Auditor and submitted to Managing Director for planning.
- Area Managers' weekly staff meetings for review and planning purposes.
- Frequent visits to branches by headquarters management to review progress and problems for planning purposes.
- Meetings with contract seed growers by area personnel and managers from the head office.

- Quarterly financial reports prepared by headquarters accounting staff based on Ghana Seed Company branch reports.
- Board of Directors meetings held frequently at various locations of the Ghana Seed Company.

Consultant technicians have always been officed in the Ghana Seed Company headquarters providing technical assistance to assigned counterparts. Short-term courses in Africa, Europe, and the United States provide training and stimuli for improvement in staff performance.

E. Fiscal Administration

Fiscal administration of the entire Ghana Seed Company is conducted at Headquarters. Two accounts are maintained in banks serving the branches of the Ghana Seed Company: Account #1 "Expenditure Account, and Account #2 "Remittance" or "Income Account." Only on written order from Headquarters can funds be transferred by the bank from Account #1 to Account #2.

The Government of Ghana remains the sole company shareholder. The Government of Ghana continues to fund the Ghana Seed Company construction activities, drawing principally upon PL480 counterpart funds. Expenditures are controlled by the Ministry of Finance and Economic Planning, with approval by the USAID Director. Upon recommendation from USAID, the Bank of Ghana will transfer funds to the Ministry of Finance and Economic Planning as needed.

In August, the Government of Ghana devalued the credit, which resulted in an approximate exchange rate of 30 cedis to one U.S. dollar. The devaluation, coupled with inflation

created stress on the finances of the Ghana Seed Company, particularly in seed buying activities. As a consequence, the Ghana Seed Company acquired a bank loan of C40 million for the purchase of seed maize and rice. It is anticipated that this action will help the Ghana Seed Company in establishing a credit rating with banks, rather than enlisting the financial assistance of the government. The Ghana Seed Company is currently in a strong financial position.

F. Fiscal Projections

Reference is made to the First Annual Technical Report, Table II-1 which covers the MIDAS II period. Because of the effects of inflation and devaluation, no projected changes are being made at this time.

G. Balance Sheets

In 1982, the Government of Ghana changed its fiscal year to correspond with the calendar year.

Fiscal reports are provided separately as follows:

TABLE II-1. Period: 1 July 1981 to 30 June, 1982

TABLE II-2. Period: 1 July 1982 to 31 December, 1982

As the reports show, the Ghana Seed Company ended 1982 in sound financial condition.

TABLE II-1. GHANA SEED COMPANY LIMITED OPERATING RESULTS FOR
THE PERIOD JULY 1, 1981 to JUNE 30, 1982

| | | Cedis |
|--|-------------------|-------------------|
| Sales | | 27,408,799 |
| Less Cost of Sales | | <u>16,922,607</u> |
| Gross Profit | | 10,486,192 |
| Sundry Income | | 535 |
| | | <u>10,486,727</u> |
| Less Operating Administrative/ General Expenses | | <u>11,221,841</u> |
| Loss before Taxation | | <u>(735,114)</u> |
| <u>FISCAL REPORT AS OF JUNE 30, 1982</u> | | |
| Fixed Assets | | 13,059,096 |
| <u>Current Assets</u> | | |
| Stocks | 6,160,046 | |
| Trade Debtors | 5,786,671 | |
| Sundry Debtors/Staff | 1,007,485 | |
| Prepayments | 298,722 | |
| Cash/Bank Balances | <u>24,369,923</u> | |
| | | <u>37,622,847</u> |
| | | 50,681,943 |
| <u>Less Current Liabilities</u> | | |
| Trade Creditors | 20,932 | |
| Sundry Creditors/Accruals | 107,051 | |
| | | <u>127,983</u> |
| | | <u>50,553,960</u> |
| <u>Financed as Follows</u> | | |
| Stated Capital | 2,000 | |
| Capital Surplus | 11,256,326 | |
| Income Surplus | <u>39,295,634</u> | |
| | | <u>50,553,960</u> |

6096A

TABLE II-2. GHANA SEED COMPANY LIMITED OPERATING RESULTS FOR THE PERIOD JULY 1 TO DECEMBER 31, 1982

| | Cedis |
|--|--------------------|
| Sales | 3,761,029 |
| Closing Stock | <u>14,203,426</u> |
| | 17,964,455 |
| Less Cost of Sales | <u>13,768,731</u> |
| Gross Profit | 4,195,724 |
| Sundry Income | 45,030 |
| | <u>4,240,754</u> |
| Less Operating Administration/ General Expenses | <u>6,916,256</u> |
| Loss Before Taxation | <u>(2,675,502)</u> |

FISCAL REPORT AS OF DECEMBER 31, 1982

| | | |
|---------------------------------|-------------------|--------------------------|
| Fixed Assets | | 13,380,344 |
| <u>Current Assets</u> | | |
| Stocks | 14,203,426 | |
| Trade Debtors | 1,686,203 | |
| Sundry Debtors/Staff | 2,269,720 | |
| Prepayments | 293,125 | |
| Cash/Bank Balances | <u>17,400,633</u> | |
| | | <u>35,853,107</u> |
| | | 49,233,451 |
| <u>Less Current Liabilities</u> | | |
| Trade Creditors | 20,932 | |
| Sundry Creditors/Accruals | <u>367,973</u> | |
| | | 388,905 |
| NET VALUE OF ASSETS | | <u><u>48,844,546</u></u> |

Financed By

| | |
|-----------------|--------------------------|
| Stated Capital | 2,000 |
| Capital Surplus | 11,256,326 |
| Income Surplus | 37,586,220 |
| | <u><u>48,844,546</u></u> |

6096A

H. Board of Directors

- Chairman - Professor E.V. Doku, Dean of Faculty of Agriculture, University of Ghana, Legon
- Member - Samuel K. Dodd, Registered Seed Grower, Winneba Area
- Member - S. Korang-Amoako, Officer-in-Charge, Plant Quarantine Unit, Ministry of Agriculture
- Member - C. B. Kpangkpari, Ministry of Agriculture
- Member - J. Wobil, Managing Director, Ghana Seed Company
- Member - (To be elected from Ministry of Agriculture)
- Secretary - P.M.T. Kitcher, Agriculture Administrative Officer, Ghana Seed Company

The Board meets monthly for policymaking decisions, approvals, and any other pertinent business.

I. Ghana Seed Company Headquarters

Renovation of a three-story building, 37 feet wide and 137 feet long, with a projected completion date in mid-1984, will become the Seed Company's new headquarters. The new quarters will provide space for present and future staff, a spare parts depot, a storage department, and kitchen facilities. Spacious grounds will permit construction of a workshop and vehicle park. Telephone services, currently not available in the Ghana Seed Company, will hopefully be installed soon.

Eight units of radio transreceivers were turned over to the Ghana Seed Company by the American Ambassador in August. Other necessary equipment was received for installation of units at all Ghana Seed Company branches. However, delivery of oscillator crystals is required before installation work can begin. Communication with the branches is presently carried on by mail or courier.

J. Ghana Seed Company Personnel

Fewer personnel were employed during 1982 than reported the previous year. The senior and management staff positions remained the same except for the appointment of an Internal Auditor and one Assistant Divisional Officer (at the Winneba branch).

Table II-3 gives a breakdown of Ghana Seed Company personnel at the various locations.

TABLE II-3. GHANA SEED COMPANY PERSONNEL

| <u>Branch</u> | Senior Staff | Junior Staff <u>a/</u> |
|---------------|--------------|------------------------|
| Ho | 2 | 103 |
| Winnebà | 7 | 75 |
| Kumasi | 5 | 78 |
| Tamale | 8 | 105 |
| Bolgatanga | 5 | 57 <u>b/</u> |
| Accra | <u>16</u> | <u>77</u> |
| | 43 | 495 = 538 <u>c/</u> |

a/ Numbers vary during the year

b/ Includes Ashiaman Test Garden personnel

c/ Casual laborers were not included since their numbers vary by seasonal work.

6096A

Goals of company personnel included completion of staffing, in-service training, standardization of office and administrative procedures and filing systems, and improvement of morale and discipline, through transfers and promotions for greater productivity. Training courses were organized locally for tractor operators, mechanics, quality control, seed processing and drying, and accounting and sales personnel. The consultants were involved in most of the training activities.

K. Marketing

Profits from the sales of seeds are the only source of income for the Ghana Seed Company. Droughts have severely decreased the volume of seed produced in Ghana. Prices charged for seeds sold were increased to sustain the seed company. Maize seed sold at $\text{¢}1,800$ per 200 pound bag. This was more than twice the previous year's price. Maize, rice, groundnuts, and sorghum seed sold out in a very short time.

A few hundred bags of Nigerian produced maize were brought to Ghana to supplement seed demand, but were mostly of unproven varieties.

The Sales and Distribution Manager was very aggressive in establishing seed sales outlets in all regions. Due to the delay in ordering vegetable seed through USAID, the number of sales agents and kiosks were not increased as expected. Most of the available seeds were sold by thirteen Ghana Seed Company owned and operated kiosks, fifty-six sales agents (an increase of only six from year before), as well as the National Sales Office in Accra and the branch offices of the company through their own sales store and through village market days. In 1984, seven additional Ghana Seed Company kiosks are planned with a goal of increasing the number of sales agents to about eighty. Most sales agents have their own kiosks or store outlets. Ghana Seed Company permits and sales agreements are issued to qualified sales agents.

The January 1, 1982 to December 31, 1982 sales amounts are listed in the Table II-4.

TABLE II-4. SALES BY BRANCHES a/

| Branch | Total Seed Sales <u>b/</u> (Cedis) | Percent of Total Company Sales (Percent) |
|------------|---------------------------------------|--|
| Bolgatanga | 2,435,032 | 9.8 |
| Tamale | 15,025,927 | 60.3 |
| Kumasi | 1,734,776 | 7.0 |
| Winneba | 1,011,211 | 4.0 |
| Accra | 3,354,896 | 13.4 |
| Ho | 1,361,457 | 5.5 |

a/ Seed sales include both imported and locally produced vegetable seeds.

b/ Seed transferred from one location to another is included as sales in the location to which seed was transferred.

6096A

L. Research

Dr. V.K. Ocran heads up the Research Division of the Ghana Seed Company. With the importation of Datsun pickups, his work activities were enhanced, making it possible to perform the required activities. Principal activities included:

- Rice and sorghum field trials at Tamale and Bolgatanga.
- Rice seed multiplication at Mile 38 station using breeder seed of IR 442 from WARDA (West Africa Rice Development Association), and Selection Number 3273 from University of Ghana Research Station at Kpong, a few miles from the Mile 38 location.
- Cowpea seed multiplications in four locations using a high yielding variety 3236 from IITA, Nigeria.
- Cowpea variety trials at Ashiaman Test Gardens outside Accra, using seed of five United States varieties and two varieties from the Crops Research Institute at Kumasi.
- Vegetable seed multiplication of local pepper, okra, and garden egg, totalling 8.5 acres, using seed selections of each crop obtained after a two year period of testing.
- Maize seed storage experiment in cooperation with the Quality Control Division, using Actellic 25, Fernasan D, and untreated, over a period of about five months, for study of grain weevil control and the effects on seed viability, etc. Consultant William Hall provided assistance to, and data assessments for, the experiment. Results will be presented at the upcoming Annual Maize Workshop usually held at Kumasi.

A summary of results from the experiment will be found in the Quality Control Consultant's report, Section VI.

III. SEED PROCESSING CENTERS

A. Introduction

Aggressive seed purchasing contributed to the doubling of maize seed processed from the 1983 crop compared with the 1982 maize seed crop. Because of drought in the Northern and Upper Regions, low rice seed and maize seed production was predicted. The rice seed situation appeared so critical that steps were initiated by Ghana Seed Company management to import both foundation and certified seed stocks from the Philippines, anticipating assistance through USAID.

Table III-1 lists quantities of processed foundation and certified seed of the major crops in 1982.

TABLE III-1. PROCESSING REPORT - 1982 CROP

| | FOUNDATION SEED | | | |
|------------------|-----------------|-----------------------|---------------------|-------------------|
| | MAIZE (200#) | RICE (BAGS) (140#) | GROUNDNUTS (80#) | SORGHUM (180#) |
| Winneba | 250 | | | |
| Logba/Asikuma/Ho | 600 | | | |
| Kumasi/Ejura | 365 | | | |
| Tamale | 201 | 516 | 43 | 2 |
| Bolgatanga | 19 | 415 | 24 | 2 |
| TOTALS | <u>1,435</u> | <u>931</u> | <u>67</u> | <u>4</u> |
| | CERTIFIED SEED | | | |
| Winneba | 1,500 | | | |
| Logba/Asikuma/Ho | 200 | | | |
| Kumasi/Ejura | 903 | | | |
| Tamale | 350 | 7744 | 1,286 | |
| Bolgatanga | 670 | 3720 | 116 | 74 |
| TOTALS | <u>3,623</u> | <u>11,464</u> | <u>1,402</u> | <u>74</u> |

6096A

The Production Division report will provide estimated quantities for 1983 crops.

B. Winneba Processing and Drying Operations

Most of the 1983 seed maize crop was processed at the Winneba branch.

Early in 1983, the Ghana Seed Company rented a 100 by 300 foot warehouse where all operations were carried out except shelling, seed drying, and sales. There is also space for storage of spare parts, chemicals and fertilizer in separate bays, as well as processing and seed storage. Total space increased about three times over what had been available in previous years. Area offices were also relocated to a separate smaller building nearby. The first set of four wagon dryers and the maize sheller/cleaner, set up two seasons ago, are only a few hundred yards away. The new seed plant being constructed is about one and one-half miles away.

The various operations still remain labor intensive, although potential handling capabilities are rather limited. Volume of seed handled is approximately one-fourth to one-fifth the capability of the new seed plant being constructed, with much less labor used.

The fire on September 29th that destroyed the Kumasi branch processing and drying equipment as well as storage facilities resulted in that area's maize seed being trucked to the Winneba branch. This seed arrived shelled, was dried using the drying wagons, cleaned and bagged, treated with insecticide, and stored at Winneba. Recently acquired Leyland 10-ton diesel trucks were used to transport the seed from Kumasi. More than three thousand maxi-bags of seed maize were handled at Winneba along with the Winneba area seed maize.

Because of a gas/oil shortage in the Volta Region, foundation La Posta seed maize from the Logba Farm, Ho branch, was trucked to the Winneba branch where electrically heated forced air is used for drying. It was then returned to Ho for processing and storage.

In late September, a second set of four drying wagons was installed at the new plant site at Winneba following completion of the new power substation. Each drying wagon has a capacity of about thirty-five maxi-bags shelled maize in bulk and can reduce moisture content from 17-18 percent to 12 percent in about thirty hours.

Loading and unloading contents of the drying wagons was done manually. If the drying wagons are needed for next year's seed maize crop some mechanized handling will be provided. The present goal of having the new Winneba seed plant operational for the 1984 maize seed crops appears feasible.

Two Clipper Number 27 seed cleaners (two-screen types) were used for all cleaning and sizing. Their individual capacities are about one-fifth the capacity of the Clipper Model D-68 seed cleaner to be used at the new seed plant.

C. Other Seed Company Branch Processing Operations

No major changes were made at Tamale or Bolgatanga in seed processing activities, facilities, or equipment. The Revised Implementation Plan did not go into effect during 1983.

Ho Branch seed maize was dried at Winneba and returned to Ho for cleaning, sizing, and storage. The new Area Manager, Alfred Ocloo directed operations.

At the Kumasi branch, following the September 29th fire, all seed maize was trucked to Winneba for processing. One older Clipper Number 27 cleaner was used on small quantities of seed maize after an auxiliary heater was brought in to supplement heating air from a Lister drying motor. Gas/oil supply shortages prevailed and limited the processing.

D. Counterpart Activities

Headquarters Seed Processing Manager, Frederick Hammond, monitored and guided the seed processing and drying activities of all locations. His efforts included training of operators and area assistant processing managers, record keeping, reporting, repair and maintenance of equipment, conducting spare parts inventory, and overseeing activities at the new Winneba plant. From records submitted, cost analyses were made of seed processing to establish selling prices for the various seeds. He also coordinated the supply of bags, twines, and chemical treatment materials to all branches. Close cooperation existed with the Consultant in all activities.

E. Winneba Seed Center Construction

All Phase I Winneba Seed Center construction was to have been completed by January, 1982. For the following reasons, the deadline was not met:

- Continuing shortages of construction materials, e.g., iron rods, cement, cement bags for handling cement, nails, roofing sheets, and many other items.
- Water shortages at site for making concrete, often delaying work for half of the month. Supply of water to Winneba town was erratic during the first half of 1983.

- Lack of contractor transport of materials to site about 100 miles away, due to shortage of tires and inner tubes, engine oil, and gas oil.
- Lack of timely supervision by Project Architect due to lack of transport by the Architectural Engineering Services Corporation (AESC).
- Lack of contractor on-site visitation delaying transport of needed materials to site 100 miles away.
- Lack of skilled workmen and ordinary laborers on site due to low pay scales of general contractor. This was corrected early in 1983.
- Payment delays by Government of Ghana to contractors for work done. This disabled future procurements on a timely basis, and caused disruptions of work schedules.

Construction work has reached a stage where it is expected that a faster rate of completion will take place than has been evident previously. In November, USAID began procurement of critically needed items for completion of the Phase I construction.

Site meetings were held every two to three weeks with all contractors on site. AESC, Ghana Seed Company, USAID, the Consultant, and contractor personnel attended. Goals were set at these meetings for contractor performance and completions.

AESC provided the information shown in Table III-2.

TABLE III-2. PHASE I CONSTRUCTION

| Structure | Work Completed by | | |
|---------------------------|----------------------|----------|----------|
| | 12/31/81 | 12/31/82 | 12/31/83 |
| | -----percentage----- | | |
| Conditioned Storage Block | 8 | 25 | 45 |
| Seed Processing Building | 59 | 75 | 93 |
| Regional Headquarters | 13 | 30 | 66 |
| Wagon Dryer Shed | 71 | 97 | 100 |
| Column Dryer Facility | -- | 10 | 75 |

6096A

Completion of Phase I construction is expected to allow the Winneba branch personnel to move to site and to commence operations in advance of the 1984 maize seed intake season. Contractors are expected to have equipment installed to dry maize seed in the column dryer, equipment functional in the seed processing building, and at least two of the five conditioned storage blocks occupied.

Contracts awarded since the First Annual Technical Report include:

1. Erecting the column dryer equipment: June, 1983 - Beta Construction Engineers, Accra; completion time eight months.
2. Installation of seed processing equipment: October, 1983 - Vector Development, Accra.

Contracts yet to be awarded at Winneba are:

- Water system, tower, tank, reservoir
- Buried fuel tanks - petrol and gas/oil on site, with dispensing pumps
- Weighbridge
- Conditioned seed storage equipment installation, install insulation

F. Status of Construction of Winneba Structures

1. Electrical Substation

Commissioning of the substation took place September 20, with power available to the four dryer wagons at the new site. Power was also brought to the seed processing building to enable the contractor to erect the column dryer for welding.

2. Column Dryer

Erection of the roof commenced in February and was completed in August. By the end of September, the contractor started erecting dryer bins which are about 85 percent set up, except for hopper bottoms. The upper drag conveyor was in place by the end of November, and the three elevators in place by the first week in December. Erecting the dryer unit was well along and was expected to be completed in time for the Christmas break or early in January, 1984. Remaining installations to be done before the end of March, 1984 included:

- Unloading conveyors below the bins
- Intake hopper and augurs

- Setting the sheller on raised platform
- Setting the control panel and constructing a protective shell
- Erecting short roof over the sheller and intake hopper

Assignment of electrical works was pending.

3. Seed Processing Building and Equipment Installation

The General Contractor had yet to bring to the site and install the two main doors. Other doors and windows are in place. Internal lighting by the electrical contractor was partially complete. Electrical hook-ups to equipment awaited equipment installation. Equipment installation started mid-November and should be completed before March 15th.

4. Conditioned Storage Block

Walls had been put up on three rooms of the storage building. Roof trusses were up on three rooms, and materials for purlins to tie trusses together and corrugated aluminum roofing was applied. Roofing has been purchased and will be brought to site only when ready for installation to prevent theft. Wood ceilings, to which styrofoam insulation will be glued using Shell-kote, were not yet in place. Conditioning equipment needs to be installed and electrically wired. Awarding the contract depends upon when the pellets will arrive in Ghana to fabricate insulation locally. Pellets are being ordered. Plastering inside and outside, painting, and venting the attic will follow. The veranda had not been built, but the trenches for footings are dug.

5. Headquarters Block

Basic construction has been completed. The roof has been put on, most window frames are in place, and plastering is in process. Interior wood work, water closets, lighting, and

windows which must be imported, remain to be done. Painting, landscaping, construction of roads, and parking lots will follow.

6. Fuel Tanks

A fueling station for petrol and for gas/oil will be set up at site, although the contract remains to be awarded.

7. Water System

Contract award for a water system is nearing the bidding stage. Awarding the contract will take less than two weeks after the close of tenders. Water will be drawn from the main water line serving Winneba, in front of the site. A well may be dug later.

8. Wagon Dryer

The shed itself has been completed. Remaining to be done are construction of retaining walls, and filling in ramps with leterite gravel.

9. Other Works

- The general contractor has yet to build an entry gate house, finish the entry road surface, level the grounds, complete drainage works, finish a partially completed fence around the site, level soil now in banks around the site, build parking lots with roof covers, and fill in various areas to a proper grade.
- The electrical contractor is to wire all structures and equipment.

G. Technical Coordinator's Visits to
Ghana Seed Company Branches in 1983

| | | |
|--------------|---|-----|
| Winneba | - | 120 |
| Kumasi | - | 1 |
| Volta Region | - | 1 |

IV. ISSUES TO BE ADDRESSED BY USAID AND THE
GOVERNMENT OF GHANA

The three Experience, Incorporated Technical Consultants express the following concerns on certain matters which USAID and Government of Ghana need to address:

A. The Revised Implementation Plan

This Plan was submitted by the Managing Director, Ghana Seed Company, to USAID in April, 1982. To date, the Plan has not been enacted by the Government of Ghana. Since the current Experience, Incorporated contract ends September 30, 1984, the potential of implementing the Plan's objectives must be explored.

The main objectives of the Revised Plan are to:

1. Upgrade the Kumasi branch electric power supply by a 500 KVA transformer to permit use of four seed dryer wagons for drying maize.
2. Upgrade Tamale rice seed cleaning and power needs with new, high capacity equipment since nearly two-thirds of Ghana Seed Company seed sales emanate at the Tamale branch.
3. Develop a satellite branch at Ejura Ghana Seed Company Foundation Farm that will accommodate a dozen or more seed growers in the prime maize production area of Ghana.

B. Continuation Versus Termination
of Experience, Incorporated Contract

Reach a firm decision in the first quarter of 1984 whether there will be an extension or termination of project support technical services now supplied by Experience, Incorporated technicians.

C. Replacement Equipment and Vehicles

Because of the short-life performance of most farm machinery, tractors, trucks, and other vehicles, it becomes necessary to review in 1984 the needs of the Ghana Seed Company in each area to plan for an orderly replacement. Listings with specifications, including spare parts procurement, need to be prepared.

D. Technician's Vehicle Replacements

Technicians travel 15,000 to 20,000 miles annually over rough Ghanaian roads. Life expectancy of Consultant vehicles under these severe road conditions is half the expected life of the same vehicle operated in the United States. Procedures for replacing vehicles for all technicians should commence by the second quarter, 1984. Vehicle repair and maintenance outside of Accra are nearly nonexistent on American vehicles. Road worthy and safe vehicles are mandatory for obvious reasons.

E. Project Procurement

The present procurement system has not been effective and a change is recommended. Lack of coordination and delaying deliveries has been characteristic. Some items have never been received despite repeated orders on different PIO/C's.

F. Participant Training

Ongoing participant training overseas is an integral part of USAID project developments and needs more attention. In 1982, one of three candidates nominated attended the Seed Improvement Short Course. None went in 1983.

Early processing of potential participants for the 1984 Seed Improvement Short Course is strongly recommended. In addition to the seed course, top management of the Ghana Seed Company should participate in management training or related courses offered in the United States.

V. PLAN OF WORK FOR 1984 - TECHNICAL COORDINATOR

The following Plan of Work is the ongoing fulfillment of the present Contract which is scheduled to end September 30, 1984.

A. Urgent Priority

- Completion of the Winneba Seed Center Phase I construction.
- Complete equipment installations in progress and begin conditioned seed storage equipment and insulation installations. Complete at least three of the five rooms to receive 1984 maize seed crop.
- Expedite country clearance and entry for Agro-Mechanic with ETA shortly after January 1, 1984.
- Implement Revised Implementation Plan as soon as USAID and Government of Ghana approve.
- Order all items approved under the Revised Implementation Plan.
- Restore the Kumasi branch capabilities for maize drying, processing and storage.
- Coordinate emergency replacement and spare parts ordering under USAID/GOG/EI contract arrangements.
- Prepare for January/February USAID Evaluation Team on Ghana Seed Company developments.

- Pursue planning for either extension or termination of present Experience, Incorporated, contract ending September 30, 1984.
- Tender for the following works and get awards of contract for the Winneba Seed Center:
 - Water works - tower, reservoir, pump station, piping, etc.
 - Conditioned Seed Storage equipment and insulation installations
 - Weighbridge
 - Fuel tanks and dispensing pumps for petrol and gas oil
 - Drainage, sewage, leveling of site, and landscaping, Winneba Seed Center.
- Arrange for receipt of insulation raw material pellets used in fabrication of styrofoam insulation for Winneba seed storage.

B. Other

- Participate in Annual Planning Conference of Ghana Seed Company in February.
- Hold site meetings at Winneba every three weeks.
- Make frequent site visits to Winneba plant, assist contractors, especially on equipment installations.

- Prepare for move to new Winneba Seed Center in preparation for 1984 maize seed crop intake.
- Make trips to other Ghana Seed Company branches as necessary, accompanied by Processing Manager counterpart.
- Provide training, assistance in developments, and guidance to Ghana Seed Company counterpart.
- Assist Experience, Incorporated team members as needed.
- Attend Ghana Seed Company weekly meetings whenever possible.
- Work with USAID Officers as needed on project matters.
- Work with AESC Project Architect, and all engineers involved in Winneba Seed Center or other Ghana Seed Company project construction and installation.
- Conduct operations in training at the new Winneba Seed Center for dryer and seed processing and storage personnel.
- Assist Ghana Seed Company in receiving all equipment and materials.
- Plan for moving surplus equipment from Winneba to Tamale and make plans for Tamale renovations and equipment installations.
- Prepare weekly, monthly, and annual reports and submit on timely basis.

VI. SEED QUALITY CONTROL
WILLIAM HALL - SEED QUALITY CONTROL SPECIALIST

A. Introduction

The position for the Seed Testing and Certification Technologist for the MIDAS II Project is set forth in the Project Paper signed June 16, 1980 under Technical Assistance Annex III-E. The job description and assignments are elaborated upon in the 1982 Annual Report and will not be repeated here.

The Ghana Seed Company has had a difficult year in 1983 with many frustrations for the Quality Control Division. Lack of rainfall and low agricultural production in 1982 resulted in food shortages and reduced seed supplies for sale in 1983. Food prices of food maize exceeded the selling price of maize seed resulting in extreme pressures for conserving maize for seed. Chemical seed treatment prior to sale and rationing the sale of seed to known seed producers became necessary. Quality standards had to be relaxed, and imported seed from Nigeria was obtained.

The short fall of rain and resultant lack of production in 1983 forebode difficulties for the coming season. The Company has taken aggressive actions to obtain increased seed supplies. Higher prices with bonuses were offered to attract early purchases of seed. Growers who purchased certified seed in 1982 were contacted for buying seed from fields one year from certification. The relaxation of the 3-generation certified system was approved for obtaining seed to be known as "selected" seed. Increased quality control activities are required to assure standards are not lowered to a point where quality is sacrificed.

Area seed quality laboratories are located at at Winneba, Kumasi, Tamale, Bolgatanga, and Ho. The company headquarter's laboratory at Accra monitors and supervises the activity of the area laboratories.

B. Accomplishments

A week long training session in seed quality subjects was held for the company quality control and production personnel in May at Bolgatanga. (See Field Trip Report 9-13 May 1983). About 25 persons attended. Topics included:

- Formation, Development and Maturation in Seed
- Plant Breeding and Varietal Development
- Certified Seed Production and Management Practices
- Seed Sampling, Germination Tests, and Record Keeping in the Seed Laboratory
- The Role of Quality Control in the Seed Business
- Laboratory Procedures for Moisture Content, Seedling Vigor, and Purity Analysis
- Seed Processing and Warehousing

An examination and course critique were held at the end of the session. It was a valuable and worthwhile exercise. Such training programs should continue to be held in the future.

Because of the shortage of seed at the end of the 1982 crop year, the Company decided to salvage additional seed from the screening by reprocessing and using a smaller screen size. This resulted in seed with two sizes of kernels. The question was raised as to the vigor of the small seed. An experiment was designed to determine differences in quality of the two seed sizes. Measurements were made as to percent germination, rate and percent of seedling emergence, and top growth weight. Five samples consisting of three varieties were seeded at a shallow (7-1/2 cm.), and deep (15 cm.) depths. No intra-varietal differences between seed size were found; however, greater inter-varietal differences between varieties were observed. A scientific paper is being prepared for presentation at the 1984 Annual Kumasi Maize Workshop by the Ghana Seed Company Quality Control Manager.

A seed storage experiment was designed in cooperation with the Research Manager to determine storageability of maize seed in Jute, Polymesh and Solidpoly polythene bags, with and without chemical seed treatment and in air conditioned versus not air conditioned storage environments. Determinations were made each month over a six month period regarding moisture content, insect populations and damage to seed, and percent germination. Moisture content was found to increase in Jute and Polymesh bags at both locations. Increased moisture content to over 13 percent in these bags over three or four month periods was associated with loss of germination. Samples in Solidpoly bags retained their low moisture content and viability over the storage period. Fernasan "D" and Actellic chemical treatments were both effective against insect invasion. A scientific paper of this experiment is being prepared by the Ghana Seed Company Research Manager for presentation at the 1984 Annual Kumasi Maize Workshop.

In spite of the reduced seed production in 1983, the seed quality control laboratories nearly doubled their analysis activity: 3,016 tested in 1983 compared to 1,582 in 1982. More purity analyses and moisture content determinations were made. Purity tests increased from 154 in 1982 to 609 in 1983. Moisture determinations rose from 437 to 1,150. Distribution of portable moisture meters to assist in field testing and to increase awareness by quality control officers of the importance of moisture control led to this increase of tests.

Maize had the largest number of tests with 774 germination tests. Local vegetable seed tested increased from 44 to 87 as the Company became more involved in production and distribution of local vegetable seed. The number of tests made at each laboratory and the crop seed tested are shown in Table VI-1.

Moisture percentage charts for egg plant and okra seed were prepared for the Steinlite Moisture Meter by calibration with the electric oven dry method. The charts were distributed to the area seed quality control laboratories.

Viability of the imported vegetable seed is determined on each lot of seed every six months. There were 115 such tests made on the national seed stock supply by the Accra Laboratory this year. The inventory of each lot is also determined, and reports on quantities and quality are prepared for the sales division throughout the year.

Expendable supplies and materials required for an anticipated 5,000 samples totalling approximately \$3,000 were originally requested in May. This order was not placed; and a subsequent request totalling \$5,000 was made in October, 1983.

TABLE VI-1. NUMBER OF SEED QUALITY ANALYSES MADE IN GHANA SEED COMPANY LABORATORIES FROM JANUARY 1 - NOVEMBER 1, 1983

| Area Laboratory | Type of Analysis | | | | Crop Seed Tested | | | | | | |
|--------------------|------------------|-----------|-----------|-----------|------------------|-----------|------------|----------|-----------|---------------------|------------------------|
| | Germination | Purity | Moisture | Total | Maize | Rice | Groundnuts | Cowpeas | Sorghum | Local Vegetables | Imported Vegetables |
| Accra | 359 | 300 | 315 | 974 | 216 | 5 | 1 | 8 | -- | 15 | 115 |
| Winneba | 266 | 192 | 541 | 999 | 258 | -- | -- | -- | -- | 3 | 5 |
| Tamale | 207 | 76 | 71 | 354 | 93 | 92 | 90 | 6 | 3 | 12 | 58 |
| Kumasi | 234 | -- | 182 | 416 | 182 | -- | -- | -- | -- | 29 | 23 |
| Bolgatanga | 115 | 41 | 41 | 197 | 14 | 24 | 4 | -- | 2 | 17 | 53 |
| Ho | <u>76</u> | <u>--</u> | <u>--</u> | <u>76</u> | <u>11</u> | <u>--</u> | <u>--</u> | <u>1</u> | <u>--</u> | <u>11</u> | <u>53</u> |
| TOTAL | 1,256 | 609 | 1,150 | 3,016 | 774 | 121 | 95 | 15 | 5 | 87 | 307 |

SOURCE: GSC Quality Control Division

1/6142A

The area laboratories are furnished with the basic equipment for seed testing but additional instruments and repair parts are needed. Not all germinators are functioning properly and some scales need replacement. As the seed program grows and laboratory activities increase, additional items will be required. A list of equipment, meeting the requirements of the Revised Implementation Plan was prepared and submitted in March, 1983. This included a manually-operated tag printer, additional hand screens, scales, and sample storage containers. No action has been taken on this request, awaiting approval of the Revised Implementation Plan by USAID and GOG.

The legalization of the Official Seed Certification Agency for Ghana has met numerous delays. A revision and amendments to N.R.C. Decree #100 and the Ghana Seed (Certification and Standards) Regulations, 1973, L.I. 802, were prepared in cooperation with Mr. Joseph Turkson, Chief of the Seed Inspection Unit of the Department of Agriculture. As provided for in the Decree and to conform with GOG terminology, the official seed certifying agency is to be known as the Ghana Seed Inspection Unit.

The Decree and Legislative Instrument were submitted to and approved by the Attorney General's Office. It was sent to the Castle for the PNDC Chairman's signature in September, 1983 and has not been returned.

Mr. Turkson was given an additional temporary assignment with the Assistant Secretary for Agriculture in July, thus causing a delay in efforts to proceed.

C. Difficulties and Problems Encountered

The delay of the United States Government to initiate the Revised Implementation Plan led to a number of difficulties in the Quality Control sector of the Seed Multiplication Project.

The freezing of funds prevented the nominated trainees from attending the Mississippi State Seed Technology short course for the third year. As a result, the program has not had the benefit of the training nor has morale building of trainee selection offered incentive to encourage individuals or organizations to put forth their best efforts.

Lack of funds for improvement of transportation and financial support for the Ghana Seed Inspection Unit also resulted in deterioration of morale and enthusiasm for the Inspection Unit.

Laboratory supplies for the Ghana Seed Company laboratories have become nearly exhausted. Staples for attaching tags to bags are not available and personnel are again tying the tags on with string resulting in lost tags in handling. Plans for improving the tag printing facilities had to be abandoned.

Supplies of favored imported vegetable seed were exhausted when the seed order was not completed. A substantial amount of Company revenue is derived from the sale of imported vegetable seed. The 1982 report indicates 63 lots of vegetable seed on hand. This has been reduced to 38 as of November 1, 1983.

Lack of a communication system between Ghana Seed Company area offices and Headquarters continues to be a problem. Monthly reports and requests for supplies or assistance are delayed until there is some person or truck traveling to carry the message. The expected radio network has not materialized.

D. Program for the Coming Year

Additional training of personnel for Seed Quality Control will be given high priority in the coming year. Hopefully, the Seed Technology Training program at Mississippi can be used this year. The availability of short courses in seed appreciation,

sponsored by FAO and/or MSU in neighboring African countries will be determined. Travel/study programs to nearby successful seed programs will be proposed. Incountry training, with or without an invited specialist, will be conducted.

Greater emphasis will be placed on seed laboratory management and distribution of quality reports. Many of our quality reports are being kept in files, unavailable to the processing and sales management personnel.

Efforts will continue to establish the Ghana Seed Inspection Unit if the Government of Ghana desires the assistance. Following the signing of the legalization documents a National Seed Committee will be appointed to review the standards and proposed procedures for the seed certification program.

If the Ghana Seed Inspection Unit is established, a seed certification manual will be prepared and published with the approval of the National Seed Committee. The standards of the Organization for Economic Cooperation and Development, following the rules for testing of the International Seed Testing Association, will be used to provide for the future possibility of entering the international seed trade.

Increased seed grower contact and education will be made through the Ghana Seed Company area offices. Growers should be knowledgeable of seed certification procedures and their purposes, as well as understand the philosophy of certified seed and the benefits of high quality seed. Their appreciation of good seed and their pride in quality production can greatly benefit sales promotion.

The work plan schedule for the Seed Consultant is shown in Table VI-2.

TABLE VI-2. WORK PLAN SCHEDULE FOR SEED CONSULTANT IN 1984

| Activity | January | February | March | April | May | June | July | August | September |
|---|----------------------|----------------------|-------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------|
| 1. Legislation of GSIU | ████████████████████ | | | | | | | | |
| 2. Appointment of NSC | | | | ████████████████████ | | | | | |
| 3. Publish Seed Certification Manual | | | | | ████████████████████ | | | | |
| 4. In-Country Training Seminar | | | | | | | ████████████████████ | | |
| 5. Selection of Participant Trainees | ████████████████████ | | | | | | | | |
| 6. GSC Annual Mtg. & Year-End Review | | ████████ | | | | | ████████ | | |
| 7. Kumasi Maize Workshop | | ████████ | | | | | | | |
| 8. Monitoring Sales Activity | | ████████████████████ | | | | | | | |
| 9. Field Inspections | | | | | | | ████████████████████ | | |
| 10. Growers' Pre-Harvest Meetings | | | | | | ████████████████████ | | | |
| 11. Monitoring Harvest Procedures | | | | | | | | ████████████████████ | |
| 12. Monitoring Seed Lab Activities | ████████████████████ | | | | | | | | |
| 13. Prepare Budget; Order 1985 Supplies | | | | | | | | ████████████████████ | |
| 14. Write Weekly & Monthly Activity Reports | ████████████████████ | | | | | | | | |
| 15. Preparation of End of Tour (30 Sep.) | | | | | | | | ████████████████████ | |

E. Issues to be Addressed by USAID and the GOG

1. The development and scheduling of a training program

As proposed in the Revised Implementation Plan, Administrative and Implementation Analysis, Section 2, the program should consist of two levels of training:

- Indepth professional training in seed technology and seed certification management.
- Nonacademic training with short courses and on-the-job training in practical seed quality control work.

The continuity and expansion of the Ghana Seed Company and a seed certification program will demand the use of additional trained personnel. Major policy points to be considered in a training program are:

- Does the level of commitment to the seed program is reflected in the assignment of adequate personnel to the program.
- Do personnel management procedures improve staff morale, motivation, and effectiveness.
- Are trained personnel being properly utilized and encouraged to seek advancement.
- Are sufficient funds being committed to training.

2. The commitment of the Government of Ghana to the development of the Official Seed Certification Agency.

The Government of Ghana must recognize the importance of seed production and the need for consumer protection. It must establish priorities and be willing to commit resources to achieve those goals. The major policy points for a seed quality program should include:

- Level of emphasis that is to be placed on seed quality both inside and outside the Government activities.
- Will seed certification be initiated, how will it be organized, can practical levels of standards be established.
- Organizational structure and interrelationships needed for all quality control (import, export, and internal) activities supported by the Government.
- Numbers, sizes, and locations of seed testing laboratories.

F. Acknowledgements

The cooperation received by the Ghana Seed Company personnel is gratefully acknowledged.

| | | |
|-----------------------|---|------------------------------------|
| Mr. J. Wobil | - | Managing Director |
| Mr. E. Blay | - | General Manager |
| Mr. P.K. Poku | - | Production Manager |
| Mr. F. Hammond | - | Processing Manager |
| Mr. A. Amihere | - | Quality Control Manager |
| Dr. V. Ocran | - | Research Manager |
| Mr. O. Gyamera-Amoako | - | Sales Manager |
| Mr. J. Erzuah-Nyenzah | - | Chief Accountant |
| Mr. E.K. Bam-poe | - | Internal Auditor |
| Mr. P.M.T. Kitche-r | - | Agriculture Administrative Manager |

All have been most helpful and cooperative.

Special recognition is also given to Miss Rebecca Adotey, newly appointed laboratory technician at Accra and the Area Quality Control Officers for their interest and performance of duties in the laboratories.

There have been many USAID personnel involved with the project in 1983 as tour assignments rotated. Mr. Larry Saiers and Mr. Roy Wagner have served as Mission Directors, and Mr. John Thomas replaced Mr. William Flynn as Project Leader. Mr. Jeremiah Parsons has become Management Officer replacing Executive Officer Mr. Gilbert Dietz. The endeavors and support of these men during a difficult year is appreciated. The new Ambassador, Mr. Robert Fritz, has given his encouragement to the project.

The support of Mr. Orris Shulstad as Team Leader and Processing Consultant and the cooperation of Mr. Sheldon Sandager as Production and Agriculture Mechanic has given the Experience, Incorporated team excellent unity.

The backup and administrative help of the Experience, Incorporated Headquarters Staff is also recognized and appreciated.

VII. SEED PRODUCTION

SHELDON SANDAGER - SEED PRODUCTION MANAGEMENT CONSULTANT

A. Introduction

The Seed Production Management Specialist arrived at post (Accra, Ghana) on February 1, 1982. The second year of the seed production cycle has just been completed under the MIDAS II contract.

Mr. Peter K. Poku as counterpart, accompanies the consultant on regularly scheduled field trips, to training programs, and makes visitations to the certified growers and foundation farms.

The drought condition this year has been the largest single factor affecting the production section of Ghana Seed Company. Abnormalities and irregularities in the rainfall pattern along the coastal area extended into parts of the Ashanti Region.

Maize growing areas of the eastern Brong-Ahafo Region were in severe drought stress; however, the western part of the region had reasonably good maize. The major rice growing areas of the Upper and Northern Regions looked promising in the early stages. With cessation of rains in early September, crops wilted severely, consequently reducing yields; maize and rice crops failed miserably.

Dr. Greg Edmeades, with the Crop Research Institute at Kumasi, concluded from field trials conducted throughout the country that maize was only 50 percent, and rice as low as 5 percent, of the normal production levels.

Foundation and certified seed production from 1980 - 1983 is summarized in Table VII-1.

TABLE VII-1. GHANA SEED COMPANY LIMITED FOUNDATION AND CERTIFIED SEED PRODUCTION a/, 1980-1983

| | Maize | | | | Rice | | | | Groundnuts | | | | Sorghum | | | |
|-------------------|-------|-------|-------|--------|--------|--------|--------|-------|------------|-------|-------|-------|---------|------|------|------|
| | 1980 | 1981 | 1982 | 1983 | 1980 | 1981 | 1982 | 1983 | 1980 | 1981 | 1982 | 1983 | 1980 | 1981 | 1982 | 1983 |
| <u>Winneba</u> | | | | | | | | | | | | | | | | |
| Certified | 1,113 | 1,410 | 1,558 | 3,158 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Foundation | 869 | 467 | 171 | 329 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9 | -- | -- |
| <u>Ho</u> | | | | | | | | | | | | | | | | |
| Certified | 348 | 270 | 183 | 220 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Foundation | 632 | 344 | 651 | 754 | 20 | -- | -- | -- | 10 | -- | -- | -- | -- | -- | -- | -- |
| <u>Kumasi</u> | | | | | | | | | | | | | | | | |
| Certified | 1,000 | 1,300 | 1,100 | 4,304 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Foundation | 363 | 382 | 365 | 81 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| <u>Tamale</u> | | | | | | | | | | | | | | | | |
| Certified | 1,132 | 100 | 400 | 1,119 | 23,187 | 16,000 | 6,740 | 1,412 | 6,785 | 1,230 | 996 | 2,865 | -- | -- | -- | -- |
| Foundation | 102 | 401 | 201 | 72 | 226 | 1,116 | 516 | 702 | 15 | 28 | 43 | -- | 13 | 2 | -- | -- |
| <u>Bolgatanga</u> | | | | | | | | | | | | | | | | |
| Certified | 500 | 630 | 600 | 1,447 | 5,500 | 3,830 | 3,532 | 1,880 | 1,200 | 10 | 116 | 595 | 191 | -- | 74 | -- |
| Foundation | 1 | 51 | 7 | 2 | 135 | 39 | 335 | 92 | -- | -- | 24 | 3 | 16 | -- | 2 | 12 |
| <u>TOTAL</u> | | | | | | | | | | | | | | | | |
| Certified | 4,093 | 3,710 | 3,841 | 10,248 | 28,687 | 19,830 | 10,272 | 3,292 | 7,985 | 1,240 | 1,112 | 3,460 | 191 | -- | 74 | -- |
| Foundation | 1,967 | 1,645 | 1,395 | 1,238 | 381 | 1,155 | 851 | 794 | 25 | 28 | 67 | 3 | 29 | 11 | 2 | 12 |
| GRAND TOTAL | 6,060 | 5,355 | 5,236 | 11,486 | 29,068 | 20,985 | 11,123 | 4,086 | 8,010 | 1,268 | 1,179 | 3,463 | 220 | 11 | 76 | 12 |

a/ All figures in maxi bags.

2/6142A

B. Duties

The duties of the Seed Production/Management Specialist as described under the Experience, Incorporated/USAID contract can be referenced from last year's annual report.

C. Foundation Seed Farm

The 1983 Basic Seed Production on foundation seed farms by area is presented in Table VII-2.

1. Okyereko

Major emphasis this year at the farm was the initiation of a soil conservation plan for mechanical erosion control. Observations were made of extreme cases of micro-channel (RILL) and gulley erosion during last year's season of high intensity rainfall in the month of June.

Survey technicians from the Irrigation Authority did a complete topographical survey of the 150 acres. The more severe upper slopes were laid out with graded channel terraces discharging into shaped grassed waterways. Gulley reclamation was necessary on the steep hillsides with some areas left to be reclaimed by the natural grasses.

A mile of farm road was regraded and graveled. Culverts were installed and a ditch channeled through the low lying areas to improve drainage. The Architectural Engineering Services (AESC) and the Highways Authorities monitored the work completed by a local contractor of Winneba.

TABLE VII-2. FOUNDATION SEED PRODUCTION BY GHANA SEED COMPANY FARMS

| Area | Maize | | Rice | | Groundnuts | | Sorghum | |
|------------|----------|-----------------------------|------------|-----------------------------|------------|----------------------------|----------|-----------------------------|
| | Acres | Bags Produced (220 lbs.) | Acres | Bags Produced (180 lbs.) | Acres | Bags Produced (80 lbs.) | Acres | Bags Produced (200 lbs.) |
| Ho | 112 | 810 | -- | -- | -- | -- | -- | -- |
| Winneba | 120 | 329 | -- | -- | -- | -- | -- | -- |
| Kumasi | 98 | 128 <u>a/</u> | -- | -- | -- | -- | -- | -- |
| Tamale | 50 | 130 <u>a/</u> | 390 | 646 <u>a/</u> | 10 | 15 | -- | -- |
| Bolgatanga | <u>5</u> | <u>2</u> | <u>120</u> | <u>78</u> <u>a/</u> | <u>3</u> | <u>3</u> | <u>5</u> | <u>15</u> |
| TOTAL | 385 | 1,399 | 510 | 724 | 13 | 18 | 5 | 15 |

a/ Estimated

3/6142A

Major season planting of 130 acres of composite 4 maize was accomplished. Early planted, low lying areas were the major source of production as the upper slopes, planted later, failed to set ears when under drought stress. A few acres of cowpeas were planted for the minor season and appear to be doing well with recent November showers.

Table VII-3 below gives a comparison of official rainfall recording at the Okyereko, Irrigation Development Dam, adjacent to the Okyereko Farm during 4 months of the major growing season.

Table VII-3. RAINFALL RECORDED AT THE OKYEREKO DAM SITE

| | Expressed in inches | |
|--------|---------------------|-------|
| | 1982 | 1983 |
| | -----inches----- | |
| April | 6.92 | 1.85 |
| May | 8.79 | 2.99 |
| June | 21.60 | 7.29 |
| July | 3.70 | -- |
| Totals | 41.00 | 12.13 |

6096A

Improvement in management and workers' attitudes and morale has been observed. The Okyereko Farm has become the focal point for seed growers' and community observation of new soil conservation and contour farming practices.

2. Volta Region

a. Asikuma. The 90-day, TZESR-W maize seed received from IITA Ibadan, Nigeria was planted on 30 acres. Results were favorable as flowering was early enough to coincide with a few showers of rain. Short season maize is in demand for early

green cob roasting. Planting a portion of land to an early maturing variety acts as insurance against adverse seasonal weather conditions, especially for the minor season plantings when the rains may be short.

b. Logba. Major season production of the Laposta variety was expanded from 70 to 82 acres. The use of the mulcher packer and cyclo planter credited getting a good stand under dry field planting conditions. Two major rains in June and July carried the crop through with a respectable yield of 718 maxi bags.

Good management/worker relationships together with a competitive spirit places the Logba Farm in first position for maize production within the Company.

c. Mile 38. Rice trials and research under Dr. V.K. Ocran is carried on at this station. On-the-job training was provided for the Ford tractor operator. Field settings, servicing, and care for the new line of mounted equipment was demonstrated.

3. Kumasi

a. Kwadaso. Erosion is severe due to very low humus content after continuous cropping for the past 20 years. Existing terraces need maintenance for effective control of run-off. It is recommended to fallow the major portions of this 40 acre farm and intensify operations at Ejura. Only small acreages will be used to increase breeder seed released from the Crops Research Institute and for growing minor vegetable seed crops (pepper, egg plant, and cowpeas).

Soil tests were conducted by Mr. Dennis from the Soil Research Institute at Kumasi: medium phosphate, high potassium, organic content 2.1 percent P.h. tests, 4.0-5.0 indicate acid soil. Liming and micro-nutrients trials are planned for next year, and a legume cover crop has been recommended.

d. Ejura. Three different plantings of Composite W maize (30 acres in May, 18 acres in July, and 20 acres in September) all suffered drought stress. Minor season September planting is 60 percent lodged from high winds. Low production, of perhaps 68 bags, is anticipated on this farm. The neighboring Ejura farms (commercial growers of maize) experienced similar low production of 1 bag per acre on 5,000 acres.

Streak disease was predominant. Next year earlier planting dates are recommended plus better control of grasses.

4. Tamale-Northern Region

a. Nyankpala. A total of 50 acres of three varieties; Composite W, Golden Crystal, and Laposta were planted in June and July. Early planting of Golden Crystal performed the best; however, all suffered from lack of rains in the September/October maturing period. Seed is small and shriveled from drought stress. Projections are for a total yield of 125 bags .

b. Nabogo. Two hundred acres were planted to six varieties of rice. Only the low depressions of the fields produced harvestable seed. In the early growing season, good stands were established. When the area failed to flood, rice withered in the flowering stage and weeds took over. One hundred bags of seed were salvaged.

c. Katanga. Two hundred acres (one-year lease) were acquired from the Food Production Corporation in a 2,500 acre flood plain near Katanga. This area is more suitable for the longer term rice varieties of FARO 15 and IR-5. Only 180 acres could be planted as fields became too wet to work until the early June rains. The river that normally overflows its banks and floods the plain, failed to do so at the early cessation of rains.

Fields were relatively free of weeds. However, the heads failed to fill and the seed is light and chaffy. The company's 340 bag yield is the best in the area. The area requires very timely field preparations, and harvesting is dependant upon when the water returns to its normal course in the river. The silt deposit makes this a very productive area when conditions are right.

5. Bolgatanga

a. Tono. An attempt was made to increase Golden Crystal yellow maize during the off season dry period on 80 acres of irrigated land at the newly developed Ton Irrigation site. Planting was done in December of 1982 on a plot using syphon tubes from a canal.

The maize was planted at 20,000 kernels per acre and the crop looked promising. During the critical period of tasseling, the water was cut off for canal repairs which resulted in poor ear formation.

The harvest time coincides with a period of short food supply in a location where, normally, hunger prevails. This maize field, being the only in the area, was pilfered by local inhabitants (something which rarely happens). In spite of posted guards, only 11 bags were gathered from 70 acres that were harvested.

This season attempts are again being made to grow 100 acres of rice during the off season. This crop is usually grown in the area and does not afford the same opportunity for pilfering at harvest time that maize does.

b. Janga. One-hundred-twenty acres were completed in this rice flat. Early seed prospects looked good. Birds, normally feeding on other grasses, attacked the rice at milk stage. Lack of rain further reduced the crop to only 78 bags of the short season varieties, IR-8 and IR-442.

Five acres of Golden Crystal maize were planted, but dry conditions limited production to 2 bags.

c. Navrongo. Five acres of sorghum (Naga White variety) were planted and resulted in a reasonable yield of fifteen bags (160 lbs). Three acres of Chinese Flourispan groundnuts yielded three bags (80 lbs) of unshelled seed.

D. Certified Contract Growers

The certified seed target, formulated at the annual meeting, revised projections from the mid-year review meeting (August 10-12) and year-end December achievements at all locations. These projections are presented in Table VII-4.

TABLE VII-4. CERTIFIED UNPROCESSED SEED PROJECTIONS - 1983
CROP YEAR a/

| Crop | Lbs/Bag | January | July | November <u>a/</u> |
|------------|---------|---------|--------|--------------------|
| Maize | 220 | 19,440 | 6,100 | 7,425 |
| Rice | 180 | 40,000 | 27,500 | 3,900 |
| Groundnuts | 80 | 11,700 | 4,780 | 3,300 |
| Sorghum | 200 | 200 | 100 | 50 |

a/ Estimated

6096A

1. Central - Winneba Area

Only 16 out of 42 growers had maize production to deliver. Rainfall was highly irregular and variable as evidenced by the fact that four growers delivered 83 percent of the Winneba Area production. One new and fortunate grower, Frimpong Farms, delivered 1,173 bags from his 300 acre farm.

The Company inaugurated an aggressive pricing structure, knowing the supply was short. The few growers who produced, delivered the major portion of their production to the Company.

2. Volta Region

Only one grower, Hillcrest Farms, consigned 50 acres of maize for certification. Rains were more favorable in this area. This grower sorted and shelled his own maize. An abnormally high percentage went into discards, this is being held in anticipation of higher market prices.

A farmer neighboring the Logba Foundation Farm has made application to be a grower for next year. There is good potential for more growers in this area.

3. Kumasi

Twenty growers signed contracts for maize production on 600 acres. Only 14 delivered seed to the Company. The majority of the growers (85 percent) are located in the Mampong/Ejura District which experienced severe drought. Most of the production came from the western half of the Brong-Ahafo Region where rainfall was more plentiful.

4. Tamale

There are a total of 90 certified growers in this important production area: 23 growers of 400 acres of maize, 37 growers of 2,070 acres of rice, and 30 growers of 529 acres of groundnuts.

Only 10 growers will have rice to harvest, and most of these have little to offer the Company as they are only recovering their initial seed investment. Prices are escalating rapidly. Producers who do have seed are reluctant to deliver. Many growers have production loans and cannot repay the banks. The seed situation is tight.

Some of the large operations, anticipating their seed needs for next year are trying to buy now at harvest time. The Company is looking into the importation of rice seed from International Rice Research Institute (IRRI), Manila, Philippines to fulfill next year's needs.

5. Bolgatanga

The 21 growers of rice expect to deliver 2,200 bags from 1,500 acres that were planted. Three maize growers planted 125 acres; five growers, 110 acres of groundnuts; and one grower 20 acres of sorghum.

Good rains were reported early in the season in the Upper Region, and crops got off to a good start. Rain abruptly ceased the first week in September when rice was just entering the boot stage. Only the early planted fields (a relatively small acreage) will harvest rice.

FASCOM, that normally performs custom combine harvesting in the area, failed to get inputs of spare parts, engine oil, and grease to service their combines. Harvesting was delayed. Bush fires threatened and destroyed some abnormally dry fields that were fully matured. The groundnut harvest was extremely difficult as the soil baked and hardened when rains ceased. One-third share of the crops was given for harvesting as they had to be dug by hand.

6. Summary

The number of contract seed growers, acreages, and production figures by crop and area are summarized in Table VII-5.

Throughout the year, numerous field trips were made with either Mr. Poku, the Area Manager, or his representative, to visit certified grower farms. Lack of communication contributes to the problem of making arrangements to meet growers at their farms.

Constraints which growers encountered, other than the weather, include:

- Lack of spare parts and dealer service for broken down machinery
- Lack of fertilizer, herbicides, and pesticides
- Lack of diesel fuel, engine oil, and grease during critical periods of planting and harvesting
- Lack of transportation and tires
- Lack of skilled machinery operators

TABLE VII-5. SEED PRODUCTION BY CONTRACT GROWERS

| Area | Growers | Maize | | Rice | | Groundnuts | | Sorghum | |
|----------------------|-----------|------------|-----------------------------|--------------|-----------------------------|------------|----------------------------|-----------|-----------------------------|
| | | Acres | Bags Produced (220 lbs.) | Acres | Bags Produced (180 lbs.) | Acres | Bags Produced (80 lbs.) | Acres | Bags Produced (200 lbs.) |
| Ho | 1 | 50 | 30 | -- | -- | -- | -- | -- | -- |
| Winneba | 42 | 2,900 | 3,048 | -- | -- | -- | -- | -- | -- |
| Kumasi | 10 | 600 | 3,222 | -- | -- | -- | -- | -- | -- |
| Tamale <u>a/</u> | 90 | 400 | 1,000 | 2,070 | 1,500 | 529 | 3,000 | -- | -- |
| Bolgatanga <u>a/</u> | <u>47</u> | <u>125</u> | <u>800</u> | <u>1,500</u> | <u>1,000</u> | <u>110</u> | <u>294</u> | <u>20</u> | <u>50</u> |
| TOTALS | 190 | 4,075 | 8,100 | 3,570 | 2,500 | 639 | 3,294 | 20 | 50 |

a/ Estimated

4/6142A

- Unproductive labor and lack of casual workers for harvest
- Pilfering of crops in the field and during harvest
- Higher cost for all inputs

The Ghana Seed Company did support the growers with assistance in obtaining fuel, oil, fertilizer, and herbicides when at all possible. Labor shortages for dehusking and sorting maize were met by enlisting volunteer student workers from the Winneba area and providing transportation for them to the farms.

The Production Specialist offered suggestions and assistance in maintenance and field settings of agricultural machinery. An unserviceable 4-row planter was modified into a 3-row unit to finish planting 100 acres of maize. Technical assistance was provided to develop, adapt, and apply those agronomic practices that were appropriate for local conditions.

E. Fertilizer, Herbicides and Pesticides

1. Fertilizer

The fertilizer supply was better than last year. Shortages for the growers did exist. Congestion at the port and lack of tires and trucks for transportation delayed distribution.

Nitrogen in certain areas failed to be delivered in time as was the case for the foundation farm at Logba.

Imports for the coming year look favorable. The Company is making its requisition through the Ministry of Agriculture, and is assured of an adequate supply when shipments arrive.

2. Herbicides

The control of grasses is only moderately effective with the present use of Primagram. A request for more effective herbicides was reflected in the Revised Implementation Plan of 1982-84. Stomp and Erradicane are more specifically suited to control the area's problem grasses which are Rothoboellia and nutsege.

A small acreage of zero tillage with cowpeas was on trial during minor season at Kwadaso Farm in Kumasi. Tall grasses were slashed leaving a moisture and soil conserving mulch on top. A complete kill of the grass was effected with the use of paraquat. The trial results look very good after one hand hoeing with only light rains.

For next season, 250 litres of Primagram for maize, and 450 litres of Avirnosan for pre-emergence use on rice is being supplied by a local dealer.

It is hoped that the USAID-funded loan request for more specific herbicides, will be realized with the implementation of the revised plans.

3. Pesticide

Adequate supplies have carried over from this year's PIO/C Commodity Shipment by USAID. Local suppliers are also filling orders placed by the Company for next year.

F. Training

1. Junior and senior staff members (a total of 30 from all areas) participated in a week long in-service workshop held during May at the Institute of Field Communication and Agricultural Training, Novrongo. Papers were presented on the topics listed below after which discussion periods followed:

- Quality control seed formation, development, and maturation
- Seed production and breeding
- Farm machinery and implements
- Seed growers' administration
- Safe handling of pesticides
- Good farm management practices
- Role of quality in seed business
- Seed processing/mechanical adaptations, labor management, record keeping
- Basic seed cleaning, grading, and screen selections
- In-field demonstrations for each department

2. In August the in-service training sessions were held in Kumasi and repeated again in Tamale to accomodate the large number of participants totaling 48. Production officers, mechanics, and all machine operators attended the training

programs. Subjects matter covered included the components, functions, care and servicing, and preventative maintenance of all the various systems of the tractors and combines

Field demonstrations and individual participation of operators in the following areas then took place:

- Safety operation of tractors and machinery in the field and on the highways.
- Operations of mounted plows, using draft and position controls.
- Field adjustments of mounted equipment, plows, and harrows.
- Coordinated use of brakes and throttle for making turns in soft field conditions.

3. On-the-job training is of major emphasis in upgrading the performance of Production Division personnel. At the Winneba Okyereko Farm a totally new concept of contour farming around the hills, instead of up and down slopes, required a great deal of close supervision. It also required planning together with the Production Division officers and training individual operators to initiate the plan.

The calibrations of sprayers, monitoring of planting equipment, and field settings of the different farm machinery under varying field conditions have been demonstrated and supervised on the company's foundation farms.

Sharing in the agronomic decisions and participating in the various training sessions has been the Consultant's counterpart,

P.K. Poku. The need to perform agro-mechanic duties at times has prevented the production consultant from working more closely with the counterpart.

G. USAID Grant Funded Farm Equipment

Table VII-6 lists the farm equipment supplied by USAID. Table VII-7 lists vehicles provided by USAID for transportation.

Since the beginning of the project, USAID has provided farm equipment for operating the foundation seed farms and efficiently upgrade production. Not only are foundation farms a source of pure, high quality seed for the contract grower, but they also demonstrate new technologies and managerial techniques of production.

The concept is being threatened as delays, non-responsiveness, and other inefficiencies hinder the necessary upkeep and replacement of older equipment with updated tillage equipment.

Last year five new 90 hp tractors were brought in to replace and supplement the 60 hp I.H. tractors (1978 model) which, after five years of use, are nearing the point where they should be written off as fully depreciated. Much of the basic tillage equipment is in a comparable stage. The new I.H.3288 tractors are incompatible with the equipment supplied with the I.H. 674 tractors. Many breakdowns occur when the tractors are used with the lighter designed, older-equipment. Inefficiencies resulted in not being able to fully utilize the greater horse power.

TABLE VII-6. FIELD EQUIPMENT USAID SUPPLIED

| Quantity | Item | Make & Model | Year Supplied | Present Condition Remarks |
|----------|----------------------|--------------------------|---------------|--|
| 5 | Tractors 60 HP | I.H. 674 (60 H.P.) | 1978 | Hour meters range from 2,890 to 3,230 Hrs. Four engines overhauled last one needs overhaul. Limited to light duty service. |
| 5 | Tractors 90 HP | I.H. 3288 | 1982 | Engine hours range from 423 to 626 hours. Good, serviceable; front tires need replacement. |
| 1 | Tractor 35 HP | Ford 3610 | 1982 | Engine Recorded Hours--954 hours--condition good, serviceable, front tires renewed. |
| 5 | Disc Plows | I.H. Supplied Athens | 1978 | Light duty plows, show considerable wear, need disc and bearing replacements. |
| 5 | Disc Harrows | P M Company | 1978 | Fair condition - Blades 60 percent worn. |
| 5 | Mulcher Packers | P M Company | 1978 | Fair condition - Serviceable. |
| 3 | Field Sprayers | Century | 1979 | Serviceable. |
| 2 | Fertilizer Spreaders | Wikomi | 1979 | Good condition - Serviceable |
| 3 | Corn Husker Picker | New Idea | 1979 | Fair condition - Serviceable |
| 1 | Slasher | Side Winder GB-722 (FMC) | 1979 | Good condition - Blades replaced. |
| 3 | Trailer | Kasten | 1979 | Serviceable |
| 1 | Harvester | I.H. 715 - Rice Model | 1979 | 900 hours on Tachometer--Fair condition, serviceable |
| 1 | Corn Planter | I.H. Cyclo 400 (4 row) | 1979 | Serviceable--Hitch being reinforced. |

TABLE VII-6. FIELD EQUIPMENT USAID SUPPLIED (continued)

| Quantity | Item | Make & Model | Year Supplied | Present Condition Remarks |
|----------|---------------------------|---------------------------|---------------|---|
| 2 | Corn Planters | IH Plate Type 800 (4 row) | 1982 | Serviceable--Repaired fiber glass box damaged in shipment |
| 1 | Low Boy Machinery Tractor | Beck Tandem Wheel | 1982 | Good - Serviceable |
| 5 | Tractor Tool Box | Int. Harvester Supplied | 1982 | Completed Annual inventory few items lost. Missing tools recorded to complete sets. |

SUPPLIED FOR MILE 38 RESEARCH FARM IN 1982 - 3610 FORD TRACTOR MOUNTED FIELD EQUIPMENT

- 1 Plow, Pittsburg, Series 284, 2 Bottom
- 1 Disc Harrow, Pittsburg Series 303
- 1 Field Cultivator, Pittsburg, 9-Shank, 7 ft.
- 1 Corn Planter - Cole 12MX (2 row)
- 1 Fertilizer Spreader, Herd
- 1 Rotary Slasher - Rhino No.5
- 1 Hudson portable sprayer

TABLE VII-7. TRANSPORTATION VEHICLES SUPPLIED BY USAID

| Quantity | Vehicle Make - Model | Year | Condition | Distance/Hours - | Remarks |
|----------------------|---|------|----------------------------------|---------------------------|--|
| <u>TRUCKS</u> | | | | | |
| 1 | 10-Ton -Chevrolet Diesel - Single Axle | 1977 | Serviceable | 144,366 km. | Gross members need repair under bed |
| 1 | 10-Ton Chevrolet Diesel - Twin Rear Axle | 1978 | Serviceable | 52,858 miles 860 hours | Engine Received Major overhaul |
| 3 | 7 Ton Chevrolet Detroit Diesel | 1979 | 1-Serviceable 2-Unserviceable | | Truck beds need new floors, parts on order for transmission and differential |
| 1 | 7 Ton Chevrolet GMC Diesel | 1980 | Serviceable | 75,164 km. | Very good condition |
| 6 | 10-Ton - Leyland Diesel-elydesoale | 1983 | New | | Received under waiver in September |
| <u>PICKUP TRUCKS</u> | | | | | |
| 1 | Ford 250 Custom | 1977 | Unserviceable | 86,383 miles | Needs engine overhaul |
| 1 | Chevrolet Crew CAB | 1979 | Unserviceable | 98,282 miles | Needs carburator and front end overhaul |
| 3 | Chevrolet - Crew CAB | 1980 | Serviceable | 52,754 72,044 | Range from fair to poor condition |
| 2 | Datsun Model 1600 GAS - Crew CABS | 1982 | Serviceable | 49,667 km. 37,681 km. | Received under waiver October, 1982 |
| 12 | Datsun-2 door Diesel Model ALG 720 TFD | 1983 | New | | Received under waiver June and September, 1983 |
| 6 | Chevrolet Suburbans | 1977 | 5 Serviceable 1 Unserviceable | | These are all high mileage vehicles transferred from USAID in 1982--range from fair to poor condition. |

These deficiencies were recognized under the Revised Implementation Plan of 1982-84. Larger units and heavier built equipment, to withstand the rigorous requirements of Ghana conditions, were to have been procured in 1983. The implementation of this Plan has been delayed endangering current project objectives.

Annual spare parts orders of May 1982 for both transportation vehicles and farm machinery failed to be forwarded by the MIDAS Project Executive branch.

The Government of Ghana designated procurement agent, AAPC of New York, which is used by MIDAS in placement of PIO/C orders through USAID has a poor performance record. Long delays, unfulfilled orders, and confusion and mix up in shipments have prevailed.

In clearing commodities at Port Tema, MIDAS is required to use Ghana Supply Commission, a governmental clearing agent. Bureaucratic inefficiencies and long delays have resulted in loss of items and missing boxes of shipments before they reach Ghana Seed Company.

Insurance claims on missing items are not made on a timely basis. The missing items fail to be reordered to fill project needs.

There is confusion with the monitoring of the PIO/C orders in what has been received and what is outstanding.

The enactment of a freeze on all USAID commodity procurement support of new orders for the project had little immediate effect in the production department; long term effect may be considerable. The annual spare parts orders that MIDAS neglected

to place on high wear items such as disc plow blades, etc. had to be delayed again until the ban was recently lifted in November. Since the orders must be placed through the MIDAS, USAID, PIO/C, AAPC purchasing agency route, it remains questionable if the parts will arrive in time for servicing the production equipment for land preparation and the planting season beginning in March - April of 1984.

The standby emergency procurement service, provided by Experience, Incorporated, has been an immeasurable support in enabling "downed" equipment to be made serviceable. Had it not been for this limited source of procurement service, the Company would be at a standstill.

H. Summary and Conclusions

The limiting factors and constraints experienced in this year's production are essentially the same as those listed in last year's report.

Reviewing figures for the year, one could conclude that production has been a complete failure. Weatherwise, it has nearly been so; however in viewing the Production Department closely, progress in all areas can be observed. Planning, management, and the execution of plans have been clearly demonstrated. More timely and better land preparation has been accomplished resulting in good basic stands. Generally good weed control has been exercised.

It can be concluded that, given better weather conditions for the coming year, the Production Division of the Ghana Seed Company will see some very concrete accomplishments towards attaining project goals.

I. Work Plan for Next Year

The seed Production Management Specialist objectives are to fulfill foundation and certified seed production requirements. The consultant will be working closely with Area Managers and divisional production officers in setting forth comprehensive foundation seed production plans. Cropping, rotations, and isolation requirements will have to be considered.

Crop production inputs of seeds, fertilizer, herbicides, and insecticides must be provided in timely fashion to all areas. Farm machinery/equipment for all major farm production operations must be ready and serviced. Fuel inputs, spare parts, and lubricants must be logistically supplied to keep operations running smoothly.

During major production operations, close field supervision will be maintained. The consultant will have to check land preparations, assist with field implements settings, check planting population of planters and seeding rates of drills, and assist with calibrating field sprayers and fertilizer applicators. Close monitoring of performance of machine operators and on-the-job training will be given when required.

The main objective next year is to work more closely with the contract certified growers to obtain optimum production. More eligible contract growers for certified seed production must be actively solicited. Farm visitations will be made during the production season to advise on improved agronomic practices, and to lend help with individual problems. Assistance shall be given in verification of contract areas planted and harvested. Seed production schedules will be coordinated with Quality Control Division and harvesting schedules with the Processing Division.

Upon the arrival of the agro-mechanic technician, a transition of duties will have to be effected. Inventories of spare parts and their locations must be ascertained. Reviews of recently placed orders and outstanding PIO/C's will have to be made. Familiarization with, and updating of, the present status of production equipment is necessary to insure readiness for next planting season.

Training of personnel is an important aspect of the program. The in-service training sessions with individual participation has been well received by both staff members and production personnel. It is intended that sessions will again be scheduled during the slack seasons of work on the production farms.

Working closely with one's counterpart is an important means of upgrading performance of the whole division. Inspiring leadership and instilling managerial abilities into key members of staff can have a great impact on the success of the project. With relief from Agromechanic duties performed in the past, it is hoped that the consultant will be able to work more closely with the counterpart in improving the production division and fulfilling seed production requirements.

6096A