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EVALUATION AND RECOMMENDATIONS
FOR IMPROVING FERTILIZER MARKETING IN
KENYA

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LEWIS B. WILLIAMS
and
JOHN H. ALLGOOD

INTERNATIONAL FERTILIZER DEVELOPMENT CENTER

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A C K N O W L E D G E M E N T S

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ABBREVIATIONS USED IN THIS REPORT

USAID	United States Agency for International Development
ADP	Agricultural Development Program
IFDC	International Fertilizer Development Center
MOALD	Ministry of Agriculture and Livestock Development
MOFP	Ministry of Finance and Planning
CAMC	Commodity-Aid Monitoring Committee
GOK	Government of Kenya
KGGCU	Kenya Grain Growers Cooperative Union
MOTC	Ministry of Transport & Communication
TSP	Triple Superphosphate
SSP	Single Superphosphate
DAP	Diammonium Phosphate
CAN	Calcium Ammonium Nitrate
SA	Sulfate of ammonia
Kg	Kilogram
KSh	Kenyan Shilling
ha	hectare
C&F	Cost and freight
Ltd.	Limited
P.E.	Polyethylene

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

A. Introduction

The United States Agency for International Development (USAID) commissioned the International Fertilizer Development Center (IFDC) to conduct an evaluation of its Agricultural Development Program (ADP) in Kenya during July 1985. The principal objectives of this USAID program are to (1) promote widespread distribution of fertilizer through involvement of the private sector, (2) make fertilizers timely available to small farmers, and (3) increase use of fertilizers by small farmers.

B. Program Initiation and Implementation

- * Conditions and covenants to ensure that program objectives would be achieved were established.
- * The two year program began in September 1984 and has been in operation less than one year. A considerable amount of progress has been made during the initial stages. The program involves \$13 million to import Diammonium Phosphate (DAP 18-46-0). At current U.S. prices the funding should cover the import of approximately 50,000 tons. To date 20,800 tons were imported during March and April 1985. This fertilizer was distributed to the major maize and wheat producing areas during the long-rain planting season, March-June. This evaluation documents the movement of this fertilizer and the implementation of the program to date. It also provides recommendations for improved implementation based on interviews with distributors, consultants, and Government of Kenya (GOK) planners.

C. Program Evaluation

- * After only 10 months of operating the program, one objective of the USAID ADP has been fully achieved, i.e. to obtain private sector involvement in fertilizer distribution. Previously, KGGCU (formally Kenya Farmers Association - KFA) virtually had a monopoly in donor fertilizer distribution. Donors provide 40-50% of annual fertilizer imports into Kenya. USAID was successful in distributing all of the USAID DAP through 16 private sector firms including KGGCU. The study survey found that the supply of USAID DAP and also other fertilizers were extremely limited at the small farmer level.

The ADP objectives to make fertilizer timely available to small farmers and to increase use of fertilizers by the small farmers have not been met. In a situation where supply is short the larger more aggressive farmers will usually seek out the fertilizers for purchase. The distribution system will also tend to serve the large farmers at the expense of the small farmer. A highly disciplined distribution system will be required in a short supply situation to meet these objectives. The ADP has made progress on objectives with approximately 35% of the 20,800 tons of DAP being sold to stockists and small farmers. Documentation, stipulated in the covenants to be provided by the Government, has been received late by USAID and in some cases has been inadequate. The import plan for 1985 was not a complete plan. Quantities needed by time frame were not indicated and correct tabulations were not made. Government committee members do not have adequate base data nor a sufficient understanding of fertilizers and their

role in food production to make timely marketing decisions. Announcements of USAID DAP prices have also not been on time.

- * Three committees were formed to allocate USAID fertilizers to distributors, and make Government decisions on fertilizer matters. Private sector participation was supposed to be on the Fertilizer Advisory Committee. However, private sector involvement has not materialized. Four Government officials; 2 from Ministry of Finance and Planning (MOFP), 1 from the Ministry of Agriculture and Livestock Development (MOALD) and 1 from the Office of the President make decisions on fertilizer allocation and obtain final approval from a committee of Permanent Secretaries from the MOALD and MOFP and the Office of the President. The performance of the committees has marginally met covenants of the USAID program.

- * The USAID fertilizer program has not had a significant impact on the pricing structure of fertilizers. The current DAP pricing structure heavily favors the distributor at the wholesale level and allows inadequate margins at the stockist level. The Government is generating a margin of approximately 12% on the sale of USAID DAP to distributors. The distributors are receiving a margin of approximately 8%. The stockists are receiving a margin of only 1%. All established retail prices are set for the 50 kg bag. A differential price for the small 10 kg bag has not been established, but is now being reviewed. A pricing study as stipulated in the covenants is nearing completion. The study recommendations when implemented should correct the imbalanced pricing policy.

- * At the time of this study confirmation on establishment of the special account for receiving counterpart funds from the sale of USAID DAP had not been received from the GOK. A procedure for programing the funds when they are received in the account is needed.
- * The USAID program for the introduction of a small 10 kg bag is justified based on the finding of the study team. A number of stockists are now selling DAP by the kilograms (kgs). Many small farmers do not have funds for the purchase of a 50 kg bag and will be inclined to purchase a smaller bag. The most appropriate small bag size has not been determined. Some agricultural officers offered the suggestion that a small bag would reduce application rates since many farmers operate on the basis of one bag per acre.
- * To date the USAID program has not had a significant impact on increasing the supply of DAP to small farmers. The program is taking steps to improve the marketing structure necessary to reach the small farmer.
- * Educational programs directed to improving fertilizer marketing at the distributor and stockist level and use at the farmer level are practically non-existent. Only one fact sheet with a recommendation for corn (based on 1972 research data) was found in the field. The lack of an educational and promotion program is one of the big voids in the marketing system.
- * Fertilizer marketing in Kenya three years ago was in a state of disarray. KFA had a monopoly position on the import and distribution of donor fertilizers. There was no

coordination of donor fertilizers. The fertilizer marketing system became a distribution system. The USAID ADP has made positive steps to correct this situation with an import plan, private distributors, price and allocation announcements, etc. USAID should continue to support the recommendations for improving fertilizer marketing in Kenya. In order to implement changes that are necessary to establish a true fertilizer marketing system policy changes are required by the GOK. The Kenya Mission should work at this level for the necessary policy change.

D. Assessment Of Other Components And Issues Of The Current Distribution System

- * At present a complete fertilizer marketing system does not exist in Kenya. The primary emphasis is on distribution. The system is non-integrated with key marketing decisions being made by different organizations. The Government decides products, quantities and price. Distributors only decide which customer will be supplied and margins to be shared.
- * An integrated marketing system will better serve the Kenyan farmers. An integrated marketing system is a centrally managed (company concept), autonomous organization having profit and loss responsibility, is self-sustaining and responsible for making all marketing decisions - on product selection, quantity of product, prices, promotional activities and distribution (place utility).
- * In an integrated marketing system the role of the GOK is one of monitoring and regulatory activity (i.e. quality control, data collection, price collusion, etc.). The Government has a key role in encouraging the development of a fully integrated marketing system.

E. DAP provided under the USAID fertilizer program is the highest analysis fertilizer on the market today, containing 640 kg of nutrient per ton. In recent years, DAP has been the most economical source of plant nutrients; this is particularly evident in a country such as Kenya where long supply lines are involved. Where small farmers are practicing the one bag per acre philosophy, DAP provides the greatest nutrient supply. The cost per kg of nutrient in DAP is KSh 9.2 versus KSh 14.2 for N from ammonium sulfate and KSh 16.2 for P_2O_5 from single superphosphate. DAP provides very attractive value/cost ratios particularly on corn and other grains where soils are high in potash.

E. The Master Plan

The fertilizer industry in Kenya is drifting aimlessly. A master plan should be established that will, when implemented, foster the development of viable and self-sustaining fertilizer industry. The USAID fertilizer program, has not addressed this issue. Further, the level of uncertainty created by the import-allocation-pricing scheme, does not favor the development of such a system. In order for a fertilizer business to be run efficiently, critical factors such as supply availability (product quantity, product type and timeliness of supply) and price must be known well in advance of the demand season. This evaluation outlines the framework for developing and implementing a master plan. It is recommended that USAID take the leadership in Kenya to make it happen.

F. Summary of Recommendations

The following recommendations, which are expanded upon in the evaluation report are presented as short and long term steps for AID to implement in support of an improved fertilizer marketing system.

- a Forward planning to ensure timely availability of DAP must be improved.
- b USAID fertilizers should be allocated to qualified distributors that can satisfy established criteria.
- c The functions of the three government fertilizer committees should be consolidated into one functional advisory committee.
- d USAID should station a fertilizer marketing specialist at the MOALD for one year to assist with the collection of fertilizer data.
- e A total of 6,000 tons of DAP should be allocated for packaging in small 10 kg bags.
- f A price differential for 10 kg bags, based on the cost of bags and bagging, should be established.
- g In cooperation with the MOALD and Research organizations, crop production leaflets that include advice on fertilizer use for maize, wheat, cowpeas, potatoes, cotton and vegetables should be developed.
- h Include urea in the USAID fertilizer program to enable dealers and farmers to plan a balanced fertility program. Urea should account for 20% of the total USAID fertilizer.

- i An effective procedure for forecasting fertilizer demand should be established.
- j The special account fund should be converted into a trust fund whereby USAID can disburse funds for educational activities that will support program objectives.
- k A fertilizer pricing structure that will encourage sales through retailers should be established. The wholesale margin should include a net profit of 5% and a retailer gross profit of 10%.
- l DAP should be allocated to qualified distributors on a 3 year schedule so longer term marketing planning can be carried out.
- m Fertilizer marketing courses to be conducted by marketing organizations and Egerton College for the marketing organization staff and stockists should be developed.
- n Fertilizer research programs to determine the most appropriate fertilizers and crop response curves should be initiated.
- o A market research study to determine the most suitable small bag size and the demand for small bags should be conducted.
- p A strategic long term master plan for developing fertilizer marketing in Kenya should be developed.

AN EVALUATION OF THE USAID/KENYA
AGRICULTURAL DEVELOPMENT PROGRAM AND
RECOMMENDATIONS FOR IMPROVING FERTILIZER MARKETING
IN KENYA

I. Introduction

Objectives

All fertilizers used in Kenya are imported. In recent years, the fertilizer market has been characterized by increased Government involvement and excessive uncertainty with respect to product supply, availability and price. Such a market environment has deterred private sector participation in the marketing of fertilizer and resulted in a near monopolistic role being granted to the parastatal organization, the Kenya Grain Growers Cooperative Union (KGGCU). The specific problems which confronted the Kenya fertilizer sector as recently as 1984 are (a) inadequate and/or untimely supply availability, particularly for small farmers, (b) the absence of a fertilizer pricing structure which fosters increased fertilizer use in Kenya and (c) the failure to promote private sector involvement in the marketing of fertilizers.

The overall goal of the USAID/Kenya ADP is to improve the present fertilizer supply system and ensure that fertilizers are made timely available to small farmers. A principle means for accomplishing this goal is to increase the involvement of the private sector.

The USAID, through the International Research Institute (IRI), contracted for the services of Mr. Lewis B. Williams and Mr. John H. Allgood, Agricultural Economists and staff members of the International Fertilizer Development Center (IFDC) to carry out a

mid-project evaluation of the USAID/Kenya ADP. In evaluating the program, the following specific issues were studied.

Terms of Reference

- * Degree of progress in development of a system to move donor provided fertilizer to the private sector;
- * Degree of progress in establishing a price mechanism that serves the interest of the farmer, fertilizer distributors, and the Government of Kenya;
- * Progress in the timely movement of local currency generated from fertilizer sales to the separate special account;
- * Management of local currency deposited in the separate special account;
- * Effectiveness of the Fertilizer Advisory Committee in helping to ensure that appropriate types and quantities of fertilizer are imported into Kenya on a timely basis;
- * Effectiveness of the current fertilizer allocation system;
- * Effectiveness of the Fertilizer Advisory Committee in bringing the interests of private sector fertilizer distributors to the attention of the Government of Kenya;

- * Effectiveness of the Fertilizer Coordinating Committee in assuring implementation of a private sector fertilizer distribution system;
- * Extent to which fertilizer has been sold in small bags (25 kg or less) and at what price;
- * Extent to which the needs of small farmers have been served by the private sector fertilizer distribution systems implemented in the Agricultural Development Loan.

In addition to the evaluation, this report includes recommendations for improving the current AID ADP and a plan of action for fostering the development of self-sustaining, integrated fertilizer marketing system in Kenya.

Time Frame

The evaluation study and report preparation was limited to a period of 30 in-country work days. During this period the team interviewed over 60 distributors, stockists, farmers and Government departments. A list of organizations and individuals interviewed is shown in Appendix A.

II. Program Initiation and Implementation

The USAID/Kenya ADP covers the period September 1984 through September 1986. During this period, up to US \$13 million in concessional loan funds will be made available to procure DAP fertilizer for Kenya. These funds should be sufficient to procure approximately 50,000 MT of DAP. A total of 20,800 MT of DAP has been delivered to Kenya at a cost of approximately \$5.7 million as of mid July, 1985. Initiation of the concessional loan process was contingent upon the Government of Kenya (GOK) satisfying a number of conditions established by USAID. All conditions precedent to disbursement of USAID funds were satisfied on December 21, 1984.

USAID developed the specific conditions precedent and covenants and pressed for the GOK's compliance to implement steps in the following order to: (1) improve the fertilizer supply system, (2) increase private sector involvement in the marketing of fertilizer, (3) increase fertilizer availability to small farmers. Conditions precedent and covenants were as follows:

Conditions Precedent

- * Evidence that the GOK has authorized the Fertilizer Advisory Committee and the Commodity Aid Allocation and Monitoring Committee (CAMC) to implement a private sector fertilizer distribution policy.

- * Evidence of the publication by the GOK of current fertilizer stock levels and donor fertilizer financing intentions. Publication of stock levels will be made by the Ministry of

Agriculture and Livestock Development (MOALD). Publication of donor intentions will be made by the Ministry of Finance and Planning (MOFP).

- * Evidence that the GOK has published an up-to-date compilation of commercial fertilizer import applications received. Compilation of commercial fertilizer import applications will be made by the CAMC.
- * A fertilizer import plan specifying types, quantities and timing of fertilizer imports as well as anticipated donor financing will be developed and published by the CAMC.

Covenants

- * The CAMC will announce wholesale and retail prices for fertilizer by November 1 of each year.
- * The GOK will publish fertilizer stock levels and known donor fertilizer financing intentions by June 1 of each year. Publication of stock levels will be made by the MOALD. Publication of donor intentions will be made by MOFP.
- * The GOK will distribute a list of commercial fertilizer import applications compiled by the CAMC by July 15 each year.
- * The CAMC will develop a fertilizer import plan specifying types, quantities and timing of fertilizer imports as well as anticipated donor financing. This plan will be published by July 30 each year.
- * The GOK will carry out a review and revision, as appropriate, of the current pricing structure for fertilizer in order to provide adequate compensation for and promote a wide distribution of fertilizer. The objectives of the review and revision will be to:

- (a) Establish wholesale and retail fertilizer prices on a timely basis so that farmers, distributors and importers can plan ahead;
 - (b) Implement a standardized price structure for fertilizer of the same type that arrives at different times;
 - (c) Establish price levels, both wholesale and retail, for various clients, i.e., authorized importers, large distributors, small distributors, village stockists, and large end users.
- * The GOK will establish a policy authorizing application of a surcharge on fertilizer sold in properly marked packages of 25 kg or less.
- * The GOK agrees that all fertilizer purchases from Government by private distributors will be paid for in cash or via a bank guarantee not to exceed 120 days. These payments shall be made directly to the special account described in paragraph (b) of this Section.
- * The GOK will establish a separate interest-bearing special account with the Cereals and Sugar Finance Corporation (CSFC) for the deposit of Kenya Shillings generated from the sale of all USAID-financed fertilizer. Counterpart shillings generated from the sale of fertilizer will be used for mutually agreed upon development activities of the Government of Kenya in the areas of agriculture, health, nutrition and family planning, education, social services, water development, environment and natural resources, energy, and regional development. The annual rate of interest on deposits in the special account will be twelve and one-half (12.5) percent.

- * On a quarterly basis, the CSFC will provide USAID a report detailing the status of the special account. The report will include: the account balance at the beginning of the quarter, the amount and provenance of individual payments made to the account during the quarter, the amount and purpose of disbursements from the account during the quarter, and the balance at the end of the quarter.

III. Program Evaluation

System to Move Donor fertilizer to the Private Sector

The USAID fertilizer program has been instrumental in increasing private sector involvement in fertilizer distribution in Kenya. Although less than one year old, the USAID program has channelled 20,800 tons of DAP fertilizer to farmers through 16 distributors, almost triple the number (6) of private sector firms that distributed AID fertilizers in 1983. Prior to 1983 only the GOK's agent, the KFA, was allowed to distribute donor fertilizer.

More important than the number of firms actually handling the USAID fertilizer is the increased emphasis USAID is requiring the GOK to place on planning with respect to fertilizers. The most significant deterrent to private sector participation (investment) in fertilizer marketing in Kenya today is the extreme uncertainty of fertilizer supply availability and fertilizer prices. Eight of the major fertilizer distributors in Kenya indicated that they would be interested in developing an integrated fertilizer marketing system if guaranteed the quantities and types of fertilizers required and a reasonable margin. Without the security of being able to secure fertilizers when needed, none of the distributors were willing to invest in promotional activities, retail operations and other factors critical to increasing fertilizer consumption.

The USAID program, through the conditions precedent and covenants, is helping to alleviate some of this market uncertainty. This is exemplified by the fact that retail price announcements are to be made by November 1, thus allowing improved planning by the private sector. Overall the USAID

objective of increasing private sector involvement has been met.

Government Involvement in the Allocation and Distribution of Donor Fertilizer

All major decisions concerning fertilizers in Kenya are controlled by the Government. The GOK is responsible for (a) determining the types and quantities of fertilizer materials to be imported, (b) determining the timing of fertilizer arrivals, (c) regulating imports through an import allocation system and (d) establishing price levels, (see Appendix B).

At present, all non-USAID donor fertilizers are channeled through the KGGCU. However, as a condition of its fertilizer program, USAID requires that all U.S donor material be made available to private distributors, thus encouraging private sector involvement. In addition, the USAID program has encouraged the GOK to establish a market environment which favors increased efficiency in the marketing of fertilizers. In order to foster the creation of such an environment, the GOK has established three separate but interrelated government bodies to handle all decisions concerning fertilizers.

The specific precedents and covenants outlined by USAID have, in general, been satisfied by the three government committees. Although their performance as detailed below, was far from adequate, the initial effort is encouraging and is expected to lead to more efficient performance in the future.

The CAMC Committee

The CAMC was established by the GOK on September 14, 1984 to implement the GOK's procedures on procurement, importation and distribution of donor fertilizer. Its original functions as established by the GOK are:

- * To allocate fertilizers to distributors country-wide;
- * To discuss and consider the co-ordinator's reports on proper accountability of proceeds of sale, bank guarantees and re-allocation of fertilizers;
- * To discuss and consider the co-ordinators report on use of funds as agreed between the Government and donors;
- * Where a donor has no preferences of projects to be financed, CAMC is to discuss and agree with the allocation of such funds to projects with the Directors of Budget and Fiscal and Monetary Departments;
- * To liase with the Attorney General's Chambers for legal advice on matters pertaining to importation and allocation of aid fertilizers; and,
- * To recommend to the Permanent Secretary to the Treasury on how to dispose of damaged or sub-standard fertilizers in warehouses or bagging factories.

The CAMC is comprised of six members as follows:

Mr. D.R. Ongalo, Undersecretary, Ministry of Finance & Planning (MOFP)

Mr. D.B. Kimutai, Principal Economist, Ministry of Finance & Planning (MOFP)

Mr. J.R. Karanja, Head of Planning, Ministry of Agriculture and Livestock Development (MOALD)

Mr. Bwisa, Representative of the Office of the President

A Representative of the Ministry of Commerce and Industry

A Representative of the Cereals and Sugar Finance Corporation (CSFC)

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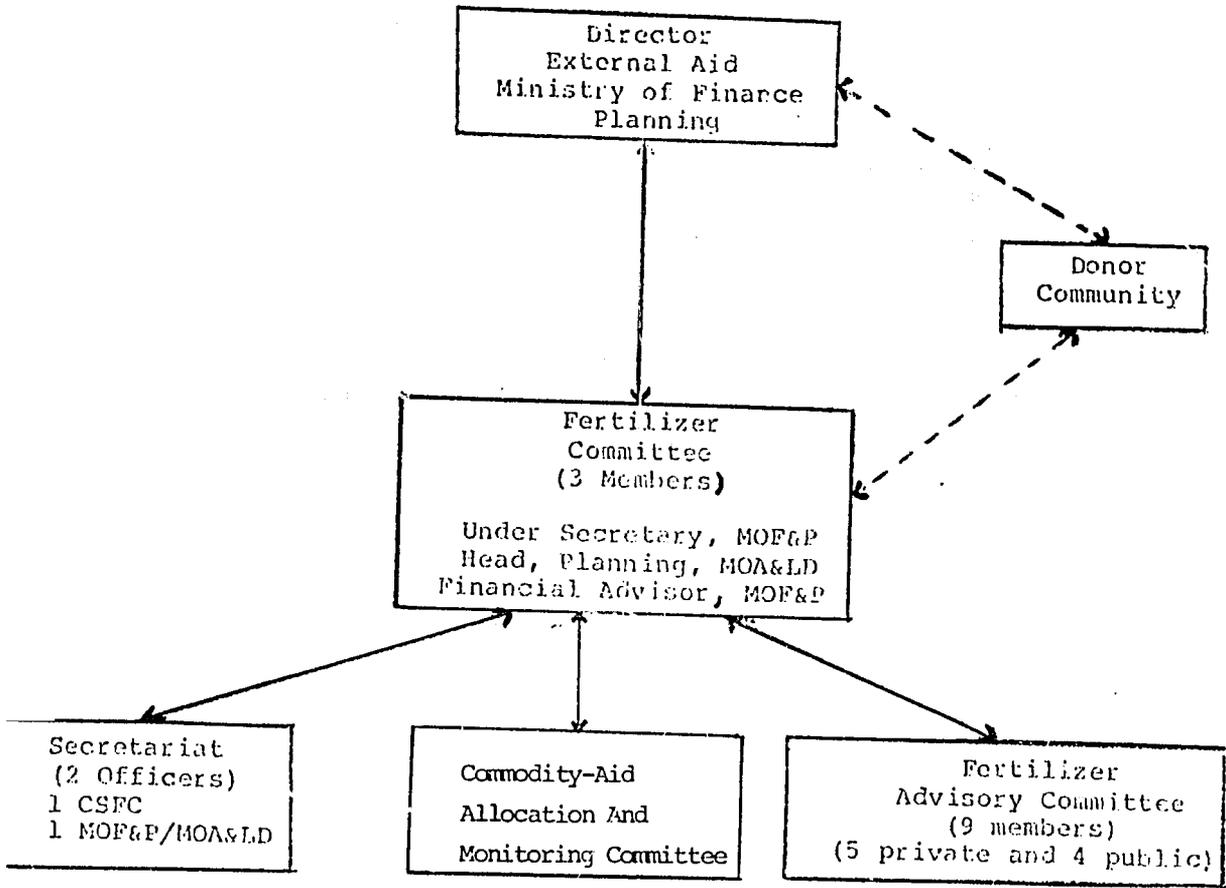


Figure 1. Government Committees responsible for implementing the Fertilizer System

MOF&P Ministry of Finance and Planning.

MOA&LD Ministry of Agriculture and Livestock Development

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Based upon discussions with selected representatives of the CAMC, in reality the Committee has only four active members, two from the MOFP and one each from the MOALD and the Office of the President. The others participate on an ad-hoc basis. Due to the dedication of its active members, the CAMC is making a strong effort to carry out its functions.

Fertilizer Advisory Committee

The Fertilizer Advisory Committee was established in 1983 as a condition to the USAID Structural Adjustment Program. Its purpose is to provide guidance and recommendations to the CAMC. It is comprised of four government representatives as follows:

- Mr. D.R. Ongalo, Undersecretary, MOFP
- Mr. D.B. Kimutai, Principal Economist, MOFP
- Mr. J.R. Karanja, Head of Planning, MOALD
- Mr. H. Muoka, Economist, MOALD

In addition, five members of the private sector sit on the committee. The committee was active for 2 years but has lost its effectiveness. This is partially due to the fact that the private sector members were unable to speak for the industry as a whole, rather their participation was largely based on individual self-interests. Also, since a close similarity of functions to be performed by the CAMC and the Fertilizer Coordinating Committee exists, this committee is no longer active.

Fertilizer Coordinating Committee

The Fertilizer Coordinating Committee was established in December 1984 in lieu of the condition precedent to establish a Fertilizer Committee. Its primary function is to ascertain that the

functions of the proposed Fertilizer Committee, the CAMC and the now defunct Fertilizer Advisory Committee, as outlined above, are properly executed. Its functions, therefore, are to ensure that the following government decisions are made:

- (1) That all decisions regarding fertilizer imports including (a) pricing, (b) allocation of supplies to distributors and (c) engaging clearing and forwarding agents are made on a timely basis;
- (2) That a fertilizer import plan based upon estimates of current stocks, statements of donor intentions and applications for commercial import licenses is developed by July 30 of each year;
- (3) That the Ministry of Finance and Planning is advised of the type and quantity of fertilizer to be requested from each donor;
- (4) That by July 15 of each year a list of approved fertilizer distributors is developed and updated, as necessary; and,
- (5) That wholesale and retail prices are announced by November 1 of each year.

The members of the Fertilizer Coordinating Committee are as follows:

Mr. D.R. Ongalo, Undersecretary, MOFP
Mr. D.B. Kimutai, Principal Economist, MOFP
Mr. J.R. Karanja, Head of Planning, MOALD
A Representative of the Office of the President

The GOK, through the Fertilizer Coordinating Committee, has been marginally successful in satisfying the covenants required by USAID. A document received from the GOK, which was to represent the import plan, stock position and donor intentions, is presented in Appendix C. The information is too general to be of real value in planning and the tabulations are incorrect. Further, due to a lack of available manpower (particularly in the MOALD where only one person is concerned with fertilizers), and government bureaucracy, critical decisions are often tardy. This was evident with 1985 fertilizer prices not being published until February as well as the late arrival of the initial shipment of USAID fertilizer. The 1985 fertilizer prices should have been published on November 1. The DAP should have been in country by early February but arrived April, thus contributing to inadequate fertilization and/or delayed planting particularly by small farmers. The decision regarding the second shipment of USAID fertilizer should have been made in early June to allow for delivery in late August; however the decision was not made until late July. Therefore, the DAP will not arrive in time for the short rains but should be bagged and be in the distribution system prior to the more important long rains.

As is apparent, the success of the committees is interdependent. Further, the fact that all committees have three common members (Mr. Ongalo, Mr. Kimutai and Mr. Karanja) suggests that they will be largely responsible for the recommendations on all fertilizer related decisions in Kenya.

These three committee members are dedicated to improving the fertilizer situation in Kenya and can be expected to put forth a strong effort to bring about the needed changes.

Allocation System

One of the principal issues relevant to the participation of the private sector in the marketing of fertilizers in Kenya is the import allocation system. The import allocation system was established to foster increased competition in the market and to ensure the availability of proper types of fertilizers when needed and in suitable quantities. The operation of the system is such that all distributors who seek to either import fertilizers, or receive USAID fertilizers, must complete a detailed application form (see Appendix D). The completed forms are submitted to the MOALD representative, Mr. Karanja. Each applicant's qualifications are evaluated against the following criteria:

- * Number of years in the fertilizer business;
- * Financial soundness of the firm;
- * Efficiency of fertilizer distribution network.

The applicants are then classified according to their relative efficiency in marketing fertilizers as follows:

- * Group A: Well established firms that have been successful in marketing fertilizers;
- * Group B: Firms that have been moderately successful in marketing fertilizers;
- * Group C: New firms, large farms, etc.

While the intent of the allocation system is good, in reality the system has too many loopholes. Some firms that do have an interest in establishing a marketing system are able to secure fertilizer allocations. Obviously a free market system of fertilizer imports would be the optimum situation. However, given the constraint that the GOK is unwilling to relinquish control at this time, the allocation system does allow increased involvement of the private sector. A total of 27 firms requested an allocation from the initial shipment of AID fertilizer. A list of the applicants, their requests, the initial allocations and the MOALD rating of each applicant is shown in Appendix E. Due to the inability of several firms to secure the required bank guarantees only 16 firms ultimately received a supply of the USAID material. However, this is well above the 6 firms that handled AID fertilizers in 1983. The final allocations are shown in Table 1.

Table 1. Allocation of DAP By Distributors and Quantity
Collected, 1984/85

<u>Firm</u>	<u>Rating</u>	<u>1st Ship</u>	<u>2nd Ship</u>	<u>Total</u>	<u>Quantity</u> <u>Collected'</u>
-----TONS OF DAP-----					
1. KGGCU	A	6,500	1,500	8,000	8,002.5
2. FARMCHEM	A	1,000	-	1,000	1,000.0
3. NYALI	A	1,500*	1,000	1,000	176.5
4. SAFINA	A	1,000	-	1,000	1,000.0
5. ABCON	A	500	500	1,000	1,008.0
6. SUPPLIES & SERVICE	C	300	900	1,200	1,200.0
7. MEA	A		1,000	1,000	1,000.0
8. TOFAS	C		800	800	590.0
9. AGRICO	B		1,000	1,000	997.0
10. MUSOLA	A		1,000	1,000	985.0
11. ATHI	C		200	200	187.0
12. FAGS	C		300	300	80.0
13. DEVJI MEGHJI	***		500	500	157.5
14. PANORAMA	A		1,500	1,500	736.0
15. NOVA	***		300	300	13.6
16. ORBIT	B		1,000	1,000	500.0
TOTAL		9,300	11,500	20,800	17,636.1
			Balance in Storage	<u>3,163.9</u>	

* Unable to secure bank guarantee for initial shipment.

** Total tonnage collected as of mid-July 1985; uncollected balance remains in storage at the bagging site, MEA Ltd., Nakuru.

*** Classification not specified.

As indicated above, ten firms have not yet collected their USAID fertilizer allocation from MEA Ltd, Nakuru where the bulk fertilizer was bagged. This is partially due to the late arrival of AID fertilizer, i.e. after the peak demand period. If the GOK had acted promptly in satisfying the conditions precedent, USAID would have provided the fertilizer in early February, thus alleviating this problem.

In addition some of the fertilizer was allocated to firms that apparently do not have established distribution networks, (i.e. Panorama, Nova, Nyali and Tofas). Thus, indicating some of the allocations may have been based on other than sound marketing activities, (this is viewed as a major weakness of the system).

An excellent example of a questionable allocation is the case of Nyali Chemicals Ltd. Nyali received the highest possible classification (A) as a fertilizer distributor. However, the firm has been in the fertilizer business only two years and has no downstream marketing facilities. All of Nyali's business has been to other distributors. With respect to the AID funded DAP, small tonnages when sold to Mea Ltd and Safina at KSh 5,300 per ton and a deal is currently being negotiated with Tofas for 800 tons at KSh 5,200 per ton - a sizeable profit for a firm that has not taken possession of a single bag of DAP. Similarly, Tofas has reportedly contracted with a sugar cooperative society to buy the entire tonnage it will receive from Nyali.

The study team made several attempts to locate Panorama but was unsuccessful. It is obvious that neither Panorama nor Nyali would be competitive in a free market situation. Their existence is solely due to the Government allocating them fertilizers in a market characterized by short supply; hence making sales virtually a certainty.

Efficiency Of Fertilizer Prices

The GOK attempts to control fertilizer prices at the retail level through the CAMC and the Price Controller. In theory the current system involves establishing prices that allow a gross margin of 30% + 100 KSh above the C&F Mombasa price for bagged fertilizers, or FOB Nakuru for fertilizers imported in bulk and bagged in Nakuru. An additional allowance is provided to cover the cost of transporting the fertilizers to the district level. Retail prices for 50 kg bags of DAP at various districts are presented in Appendix F.

With respect to the USAID supplied DAP, the price formula was not used. The DAP was priced to wholesalers at KSh 4907 per ton of bagged product F.O.B. MEA Ltd Nakuru. The difference between the wholesaler price (KSh 4907) and the established retail prices includes wholesaler and retailer margins.

At this time, a detailed study of fertilizer prices is being conducted for the GOK by a consultant funded by the Dutch Government. The study team discussed the fertilizer pricing situation with the consultant and our findings are generally in agreement. The extent of that study and the resulting recommendations will certainly be more inclusive than the depth required under the terms of the USAID program evaluation. However, several observations on the deficiencies of the current pricing system are made to emphasize the negative impact the present pricing structure makes on marketing in Kenya.

Margins

Based upon interviews with approximately 50 distributors and stockists that received USAID funded DAP, the bulk of the margin is retained by the distributor, thus providing little incentive for development of an efficient marketing system to reach the small farmer. All stockists interviewed indicated that they carried fertilizers to compliment their product line and as a service to the small farmer. The estimated marketing costs and margins involved in the sale of USAID funded DAP are in Table 2.

Wholesaler profit margins on USAID funded DAP totaled approximately KSh 443 per ton or about 9%. Profit margins for retailer/stockists are estimated at only KSh 85 per ton or about 1.5%. With such a pricing structure, it is easy to see why there is such a great interest in being a fertilizer distributor and such little interest in expanding retail operations.

Table 2. Fertilizer Marketing Costs and Margins,
USAID Funded DAP

	<u>ITEM</u>	<u>KSh</u>	<u>% of Total</u>
	F.O.B. US GULF (bulk DAP)	2,963	0
Government	Freight, U.S. Gulf-Mombasa	757	
Level	Port Charges	128	
Costs	Transport by rail , Mombasa-Nakuru	352	
	Handling and Bagging Cost, Nakuru ^a	193	
	Loss - 2%	74	
	GOK Profit (covers incidental cost)	<u>440</u>	
	Cost to Wholesalers	4,907	85%
	Bank charges (guarantee plus interest)	120	
Wholesaler	Transport	15	
Level	Handling	15	
Costs	Loss @ 0.5%	25	
	Wholesaler Profit ^b	443	
	Cost to Retailer	5,525	96%
Retailer	Handling Costs	15	
Level	Transportation	10	
Costs	Financing (2 months @ 1% month)	110	
	Losses @ 0.5%	28	
	Retailer Profit ^b	85	
	Retail Price in Nakuru	5,773	100%

a/ handling includes KSh20 for storage

b/ includes allowance to cover profit, depreciation, taxes and other organizational costs

Supply Availability

The current pricing structure encourages sales in close proximity to the district headquarters. Since prices are quoted by district, any subsequent transportation and handling expenses to deliver fertilizer to the village level must be deducted from the stockist's already inadequate margin. As a result, supply availability at the village level was found to be very limited.

Price Differential - Small Bags

Fertilizer prices in Kenya are currently fixed for 50 kg bags. Although some distributors and stockists do offer quantity discounts, the pricing policy does not allow for the recovery of additional costs incurred when 50 kg bags are opened and the fertilizer is repackaged in small bags.

The procedure for repackaging varies. Two distributors were observed rebagging DAP in 10 kg polyethylene (P.E.) bags. The bags were sealed by sewing; hence an expensive and labor intensive operation, (see Table 3). Both distributors indicated that they absorbed the additional cost of rebagging in order to provide a service to their small farmer customers. However, in the Nakuru branch of one of the distributors a 10 kg bag was priced at KSh 65; hence a price of KSh 6,500 per ton or 13% above the government price.

In the case of stockists, nearly everyone opened 50 kg bags and sold DAP by the kilogram. The fertilizer was packaged in small brown paper "grocery" bags. In most cases, the prices quoted by stockists ranged from KSh 6 to KSh 7.5 per kilogram.

However, one retail shop in Nakuru had a 2 kg bag of 20-20-0 fertilizer on display at a price of KSh 20 or KSh 10,000 per ton, versus KSh 5,773 per ton if sold in 50 kg bags at the GOK established prices.

Table 3. Cost of Repackaging DAP in 10 kg bags*

<u>ITEM</u>	<u>Cost KSh</u>
Labor	0.16
Utilities	0.02
Thread	0.02
Polypropylene bag	<u>2.85</u>
Total cost per 10 kg bag	KSh 3.05

* Cost based on opening a 50 kg bag and repacking in a 10 kg bag. If bulk is provided for packaging, the cost would be less.

The GOK has attempted to fix prices at a level which will allow a profit to those involved in fertilizer marketing and yet encourage use at all levels in the agricultural sector. However, the system has had a negative impact on fertilizer marketing beyond the wholesale level. Further, a changing market environment (i.e. various bag sizes) has rendered the current pricing system inadequate.

Management of KSh Generated From The Sale of USAID DAP

The covenant stipulating that the GOK would open a separate special account with the CSFC for depositing funds generated from the sale of all USAID-financed fertilizers has been satisfied. However, as of July 27, the study team found that the account was not yet established or at least notification has not been received at USAID.

Funds Accumulated

Assuming the account will be opened soon, funds should accumulate rapidly during late July and August due to the fact that the 120 day bank guarantees for the first shipment which arrived in Mombasa on March 7, will come due on July 27, 1985, (Appendix G). The bank guarantees for the second shipment arriving April 8, will begin falling due August 28, 1985.

Price Waterhouse, the monitoring contractor employed by USAID to document the movement of USAID DAP, reported that all of the 20,800 tons of USAID-financed DAP had been received by MEA Ltd in Nakuru. With the exception of 3,163.9 tons, the distributors had collected all of their allocations. Distributors with significant tonnages to be collected from MEA Ltd on July 8, 1985 included:

<u>Company</u>	<u>Uncollected Tonnage</u>
Orbit Chemical	500
Panorama	764
Nyali Chemicals	873

By the end of August 1985, a total of KSh.102,065,600 should be accumulated in the special account at CSFC.

Fund Expenditures

USAID has not drawn, nor have arrangements been made to use, counterpart shillings accumulated in the special account for mutually agreed development activities of the Government of Kenya in agriculture, and other areas as stipulated in the covenants. USAID does not appear to have a clear procedure for obtaining agreement for the use of the special account funds. An attempt was made to obtain agreement to use a small amount of the funds for a Fertilizer Marketing Training Course for Distributors to be held at Egerton College during 1985. No response to this proposal was received by USAID from the Government.

Since the special account has not yet been established, the CSFC has not provided USAID with a quarterly status report detailing balance, payments as required in the covenants.

Value of Small Bag in Fertilizer Market

At present almost all fertilizer sold in Kenya is packaged in 50 kg bags. While suitable for larger more efficient farmers, it appears that the 50 kg bag is unsuitable for many small farmers, particularly those with limited financial resources, little or no knowledge of fertilizer, and small crop areas. In addition, handling and transport of the 50 kg bag is an excessive burden for small farmers.

Based on a 1983 study prepared by Mr. H.A.S.H. Elkindy, there is a strong indication that as many as three-fourths of Kenya's farmers would favor smaller bags if available. Further, almost all stockists and small farmers contacted indicated a desire

for a smaller bag. A number of stockists said that they opened the 50 kg bags and sold fertilizer by the kilogram. Several stockists were observed making sales of DAP to small farmers in kg lots.

At the distributor level, in 1985 two firms (MEA Ltd and Supplies & Services) repackaged a portion of their fertilizer stocks in small (2 kg and 10 kg) polyethylene bags. The cost of repackaging was about KSh 3.05 per bag or KSh 305 per ton of material bagged in 10 kg bags.

Due to the initial interest in the small bag, both distributors plan to continue bagging some fertilizer in small bags as a service to their farmers. In fact, during an interview session the manager of Supplies and Services placed an order for 15,000 - 10 kg bags to be used in bagging DAP and calcium ammonium nitrate (CAN). In addition, KGGCU indicated that in the near future they would bag up to 300 tons of 20-20-0 fertilizer in 10 kg bags.

Based on the current GOK pricing policy, no differential is allowed for the extra cost of packaging in small bags. Hence the additional cost incurred is borne by the distributors. Forecasting the demand for fertilizers in small bags is beyond the scope of this study. However, the market potential for the small bags appears significant, particularly in areas of high population and small cropped acreages. Aside from the apparent popularity of the small bag, at least one agricultural extension agent indicated that the use of the small bag could have a negative impact on total fertilizer use. His reasoning was that farmers with limited financial resources would elect to use less than the 50 kg that they had applied in the past.

Several distributors stated that small bags, when constructed of P.E., may offer some problems in transporting and stacking. This potential problem should be evaluated in the test marketing program by distributors.

Importance of the Small Farmer

The importance of making fertilizers available to the small farmer and his role in increasing food production in Kenya has been well documented. There are two ways of increasing food production. Additional land can be brought into production. The World Bank Study "Kenya Agriculture Inputs Review Volume II", forecast that for the period 1983 - 1990 new land will be brought into crop production at the rate of approximately 2.7% per year and will reach a total area of 1.95 million ha. by 1990. Approximately 7% of Kenya's land area is classified as high potential and has good productive soils and reliable rain fall. Another 11% of the total area is of medium quality. Most of these lands are presently under cultivation and the opportunity for horizontal expansion is limited. The principal area for expansion lies in the semi-arid regions that have marginal crop production capability. For the short run and until the crop production infrastructure can be developed, increased production in this area is also limited. The second way for increasing food production is vertical expansion or increased production per unit of land. According to recent studies, this offers the best opportunity for increasing food production by 4% per year which is required to maintain pace with Kenya's population requirements.

The small farmer has an important role to play in increasing food production in Kenya. The Integrated Rural Survey (IRS) II, 1978 indicates that 50% of all farms average 2 hectares (ha.) in size and account for 3.5 million ha. of the total crop area. The study further shows that 90% of all farms are under 5 ha. Since the study, fragmentation of land holdings into smaller units has continued. The World Bank's Country Study entitled Kenya, Growth and Structural Change, Volume I shows that agricultural production can increase with a reduction in holding size. The report shows that with every 10% reduction in holding size, output per ha. increased by 8%. Other experiments in Central, Eastern and Rift Valley Provinces have produced similar results.

Conversely, other studies indicate that crop production does not always increase when large farms are subdivided into smaller units. A considerable amount of land may be taken out of production with the construction of buildings and roads. Many times the best land may be taken up for these purposes.

Profitability of Fertilizer

If agricultural production is to be increased in Kenya, a significant proportion of the increase will be forthcoming from the small farmer sector. Essential crop production inputs and infrastructure for marketing crop produce must be made available to him. Fertilizer is one of the important essential inputs and its use is profitable to the farmer. Studies indicate that currently, marginal returns to fertilizer use are highest for coffee and tea at about KSh 10-14 and approximately KSh 3 for maize and wheat. Fertilizing sugar cane is not as profitable to the farmer and returns only about KSh 1.2

for each KSh invested in fertilizer. FAO fertilizer trials on potatoes from 1968 - 1974, indicate a return to fertilizer use of between KSh 6.7 - 10-0. Now that fertilizer prices are falling, and with stable crop prices, the returns to fertilizer use in Kenya should be increasing substantially.

Fertilizer Availability to Small Farmer

For the period July 1, 1982 - June 30, 1983, it is estimated that small farmers, cultivating up to 10 ha. of land, consumed 43% of the fertilizer used in Kenya. In three districts where small farmers prevail, Murang'a, Nyeri and Kirinyaga, cooperative unions accounted for 72.5% of sales, KTDA 17%, KGGCU through retailers 5.2%, and KGGCU direct to farmers 5.3%.

If small farmers are to have fertilizers timely available, their requirements must be met by retailers/stockists. The study team found that fertilizers are currently more available at retailers around the large cities than in the villages. For example, fertilizers were found to be available in adequate quantities in Nairobi, Nakuru, Eldoret, Kitale, Kisumu, etc., but most often not available with the retailer and stockist in the smaller villages. This is an expected situation since distributors can sell their allocations in the major markets and have little incentive to create sales in the villages. On a trip from Eldoret to Kisumu with a stop in every village along the main road, only one fertilizer stockist was located. The KGGCU branch in Kisumu reported that they have a total of 165 stockists in the district and make 90% of their sales directly to farmers and 10% through stockists. For the 1985 crop year (December-July) the KGGCU Kisumu branch sold approximately 2,000 bags of DAP, 1,000 bags of TSP, 300 bags MAP and 5,000 bags of 20-20-0.

The non-availability of DAP at the retailer and stockist level is indicated by the situation found at the Londiani Cooperative Society Ltd. In 1984, this society sold 2,000 bags of fertilizer, including 1,000 bags of LAP. This year sales total only 10 bags of DAP and 70 bags of 20-20-0. The manager estimates that 3,000 bags of DAP could be sold to the 600 farmer members if the fertilizers were timely available. The Kericho Union did not have any stocks to supply their societies. The Cooperative Unions reported that approximately 90% of its fertilizers were sold to small farmers.

In a survey of principal distributors of USAID DAP, a high percentage of the total allocated to distributors was sold to large farmers. An estimation of sales to large farmers, other distributors and to small farmers and stockists as provided by the distributors is presented in Table 4.

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Table 4. Estimated Fertilizer Sales by Categories and Principal Distributors of USAID DAP.

<u>Distributors</u>	<u>Large Farmers</u>	<u>Other Distributors*</u>	<u>Small Farmers and Stockists</u>
	-----Percentage-----		
Murang'a Farmers Coop***	20	-	80
FarmChem	70	-	30
Devji Meghji	40	60	-
Orbit Chemical	60	-	40
Safina	50	-	50
ABCON	100	-	-
Supplies & Services	30	10	60
Agrico	90	-	10
KGGCU	30	10	60
FAGS	20	-	80
Musola	-	100	-
MEA	30	5	65
Benchem***	90	-	10
Tofas	65	35	-
Nyali	-	100	-
Panorama	**		
Nova	**		

* Includes sales to cooperatives.

** Unable to contact.

*** Did not receive an allocation of AID DAP.

It was not possible to determine the exact sale of DAP by category. It was assumed that DAP sales would follow the distributors normal outlet pattern for other fertilizers. In the category "other distributors," it was not possible to determine what percentage of sales are made to small farmers. The "other distributors" many times were also distributors that had received an allocation of USAID DAP.

The study team found that as the distance increased going away from larger cities and markets, the availability of fertilizer decreased. The supply of DAP at the village level in 1985 has been limited. Most stockists surveyed had not received an adequate supply for the long rains in 1985.

Timely Supply

Retailers, stockists and farmers indicated that a timely supply of DAP was one of major constraints to use. Retailers in the Central portion of Kenya stated they need their DAP supply by late February so that it will be available to farmers with the on-set of the long rains in March/April.

Retailers in the Western section of Kenya stated that they needed DAP supplies by mid-December, since many farmers start planting with the arrival of rains in January.

The study team found that USAID DAP did not reach farmers in time for planning and proper use on crops grown during the 1985 long rains.

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A Balanced Fertility Plan

To increase food production at the small farmer level a balanced fertility program is required. Even when DAP is applied as a starter (basal dose), extra nitrogen is required for side dressing if good yields are to be obtained. Small farmers that acquire their fertilizer requirements primarily from stockists were not able to purchase nitrogen for top dressing this year. The larger farmers were able to purchase either CAN or urea. However, in most villages suitable top dressing fertilizers were not available to the small farmer. A role of research is to determine the most appropriate fertilizer by ecological zones for principal crops. There appears to be a significant gap between requirements and products available on the market.

Credit For the Small Farmers

In most cases, small farmers do not have adequate purchasing power for fertilizers. However they normally have more cash at the end of the harvest season following crop sales, than at other times. The exact time of harvest varies by ecological zones, but can be stated generally as November/December. Stockists should have their fertilizer stocks at that time in order to sell to the farmers.

The study team was informed that, by law, distributors and retailers cannot provide credit to customers and charge an interest fee for this service. Given this situation, distributors and retailers are not inclined to provide credit even to their most worthy customers. Due to retail margins being so small, the cost of credit cannot be recovered in the price of fertilizer.

Educational Programs On Fertilizer Use

At the present time, very little emphasis is placed on educational programs for fertilizer use, particularly at the stockist and farmer level. Although several of the distributors do have a good working knowledge of fertilizer use and plant-soil-fertilizer relationships (i.e. Orbit Chemical, KGGCU, MEA Ltd., Devji Meghji, Supplies & Services and Safina), the uncertainty of future developments in the fertilizer markets has deterred investment in educational and promotional activities directed toward stockists and farmers. The study team found that most stockists had a very limited knowledge of fertilizers. Further, the basic fertilizer use philosophy of small farmers was "one bag per acre". None of the small farmers contacted used a second "top dressing" application on their crops.

The only field demonstration seen was that being conducted by Orbit Chemical Company in the Kitale area. The demonstration involved the use of "Rapid Grow" (3-18-18-1S and 9-18-9-1S), a liquid fertilizer material that is locally produced. The Government does not have supply and price controls on Rapid Grow. Hence, Orbit is eager to develop this potential market and is willing to make the necessary investment in educational promotional activities.

Although planting brochures and agricultural chemical charts were observed in many areas, the study team found only a single leaflet on fertilizers. Presented as Appendix H, the leaflet was prepared by the Netherland funded Agricultural Infrastructure Improvement Project. It shows the nutrient content of fertilizers commonly used in Kenya and provides a

recommendation for fertilizer use on maize. No educational literature was found for other crops frequently planted by small farmers.

The GOK is currently involved in an educational program which involves the distribution of about 250 tons of fertilizer in 2 kg bags. The fertilizer was provided by the Danish Government. The program consists of bagging 20-20-0 fertilizer in P.E. bags with planting instructions for maize printed on each bag. The instructions are written in both English and the local languages.

The USAID program has not yet made a contribution to increased educational and promotional activities.

Agricultural Extension MOALD

Apparently no Government funds are allocated to the Agricultural Extension Service for educational programs on fertilizers. Although some extension officers did indicate that they made personal contacts with many farmers, their emphasis seemed to be on planting techniques and other non-fertilizer matters. The extension staff did indicate a willingness to conduct seminars on fertilizer use provided adequate funding was available.

IV. Assessment Of Additional Components And Issues Of The Current Fertilizer Distribution System

Non-Integrated Approach to Fertilizer Marketing

A total fertilizer marketing system includes several elements: --- product selection, product pricing, determination of place of distribution, and promotion. The current system in Kenya is a fertilizer distribution system jointly implemented by the MOALD, MOFP, MOTC and distributors. A complete fertilizer marketing system does not exist. Figure 2 shows the marketing functions that are carried out by Government and private distributors. The Government performs most of the functions --- product, price, allocations and margins. Promotion is listed as a Government function, however, the study team did not find much evidence of promotional activities in advertising, education and fertilizer research. Advice to retailers on product use is practically non-existent. The forecasting procedures observed were totally inadequate to determine effective demand by products. Transportation of fertilizers from Mombasa to Mea Ltd, Nakuru is carried out by the MOTC. The fertilizer allocation system is such that there is no incentive for distributors to develop a downstream marketing system.

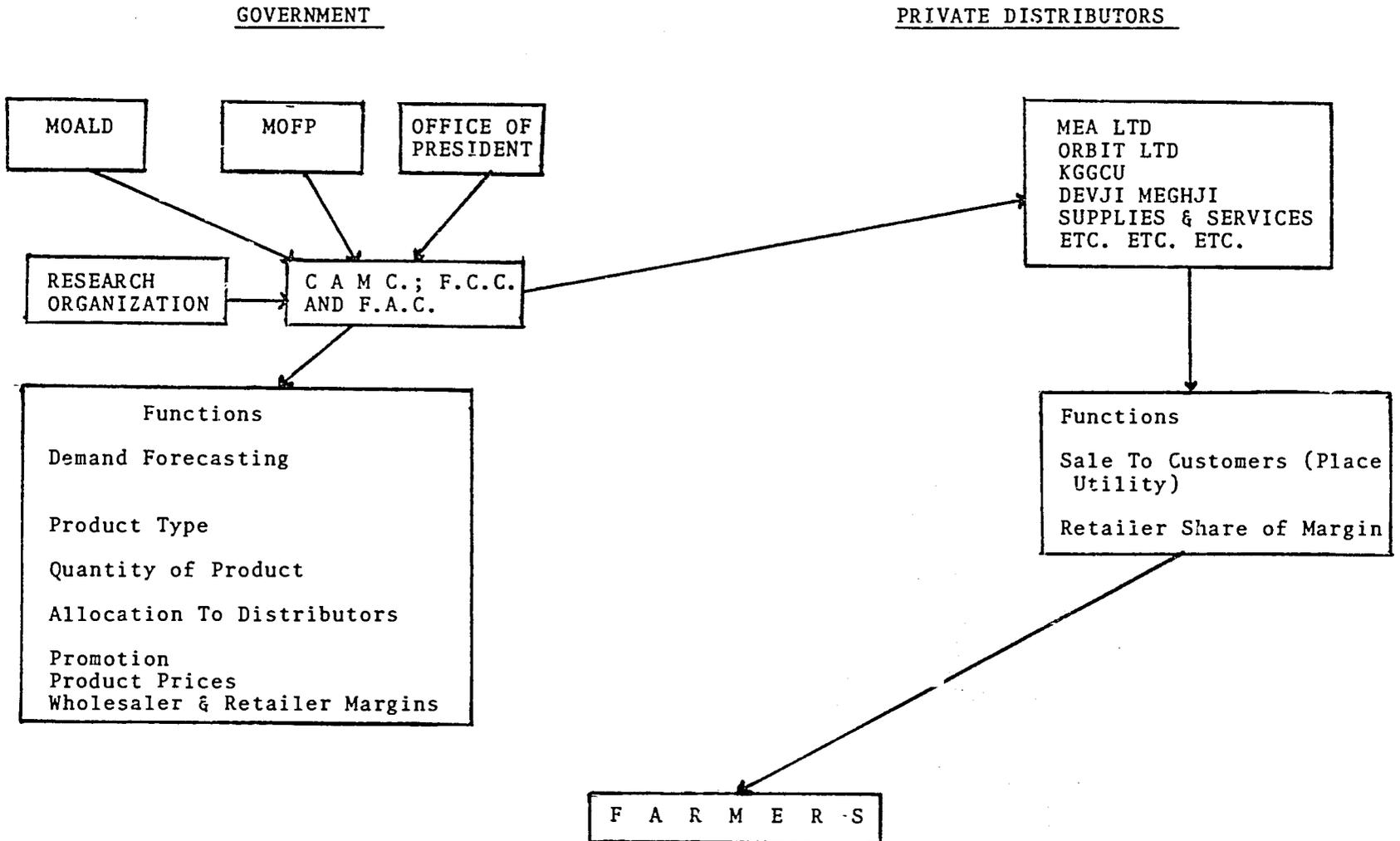


Figure 2. Marketing Decisions performed by Government and Distributors

Marketing functions performed by the private distributors are limited. These functions are:

- 1) To determine which customers will receive a portion and what quantity of his limited fertilizer supply; (2) to determine the amount of margin that the distributors will share when sales are made to retailers; and (3) The retailer/stockist provides transportation to his place of business.

The non-integrated fertilizer distribution system can never be highly effective nor can it be cost efficient. There will always be gaps in communication between ministries, fertilizer researchers, distributors, and farmers, thus precluding the ability to perform marketing functions properly. As an example, no-one knows the farmer better than the retailer. He is in a position to know what his farmer customers need, how much and when. He is also in a position to advise the farmers on product use. In the non-integrated distribution system which exists in Kenya, the retailer is not given an opportunity to perform the functions normally expected by him.

Integrated Approach To Fertilizer Marketing

Most developed countries use the integrated approach to fertilizer marketing. Marketing researchers have established a positive correlation between integrated marketing and the viability of country economics. An integrated marketing system simply stated means that all marketing functions are carried out in one centrally managed, autonomous organization having profit and loss responsibilities. Figure 3 and 4 show a typical integrated fertilizer marketing system. In this system all marketing functions are carried out by the marketing organization. These functions would be to:

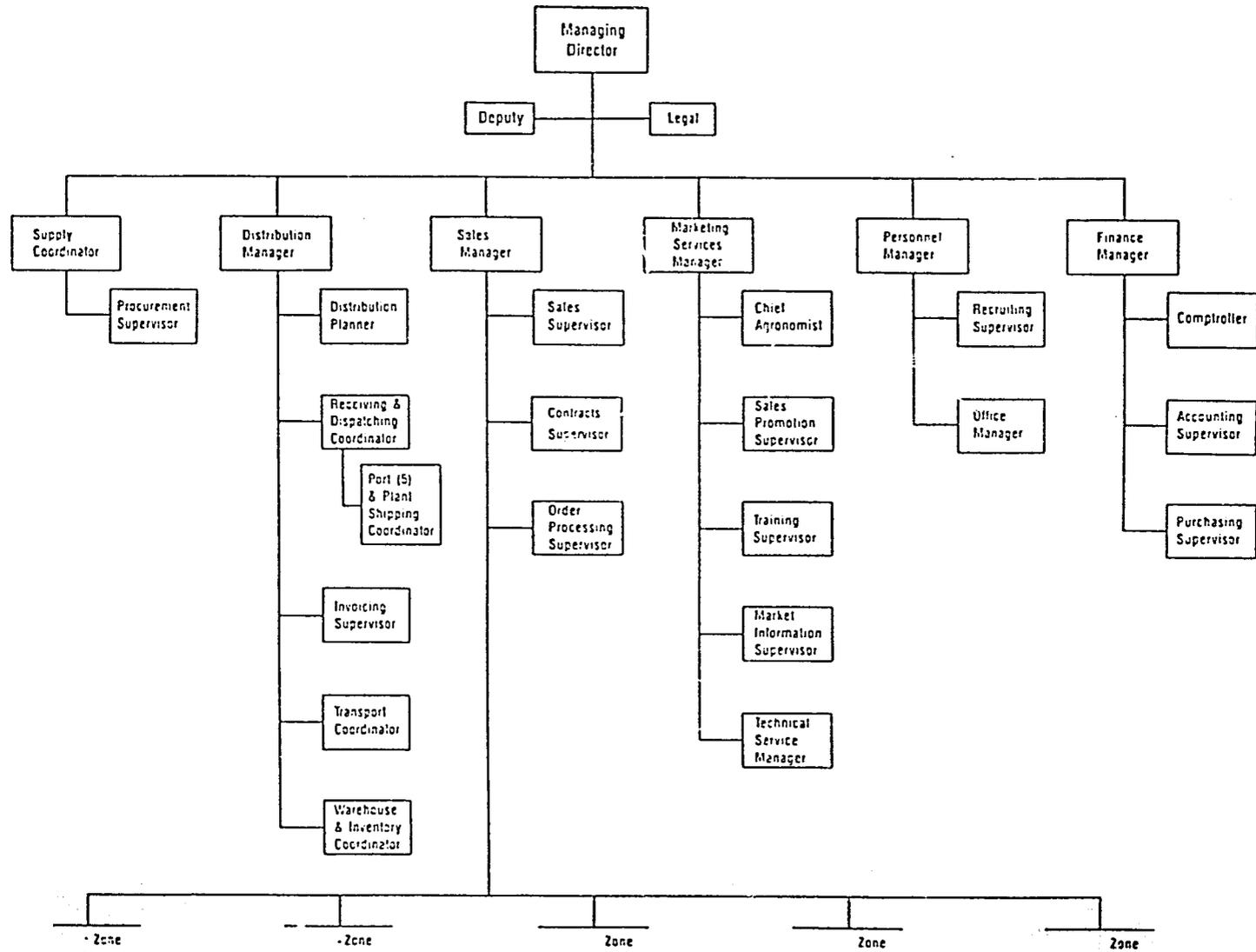


Figure 3. An Integrated Fertilizer Marketing Organization

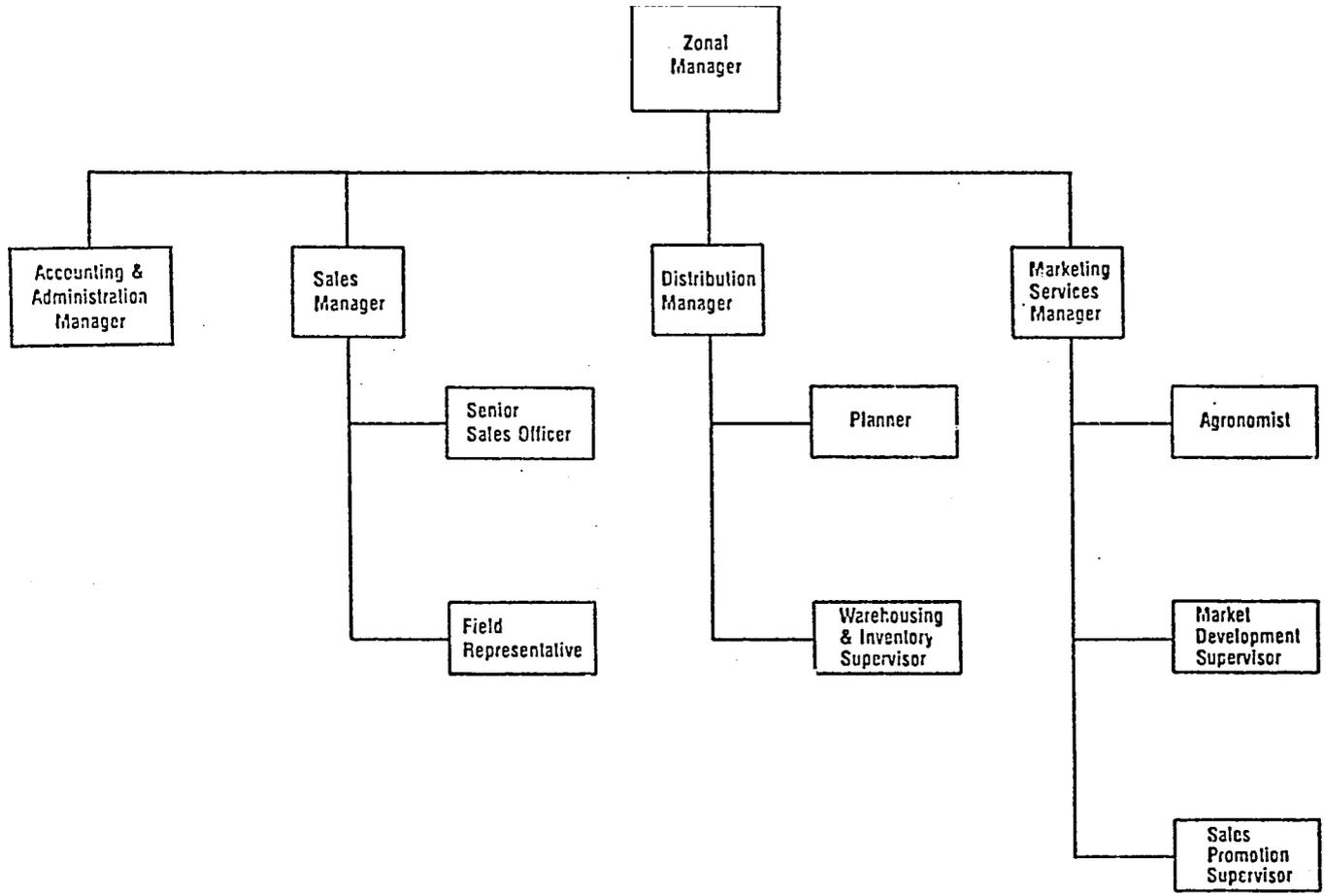


Figure 4 An Organizational Structure for a Typical Marketing Zone.

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- a) Determine the products required based on research data and keep an adequate supply for timely availability to the farmers;
- b) Determine the price of products based on marketing costs and a reasonable profit;
- c) Determine when the products are required in specific markets and arrange transportation to the appropriate markets;
- d) Forecast demand by products at the farmer level in each market and determine quantities required to satisfy demand; and,
- e) Determine promotional activities and time periods for educating retailers and farmers on product use. Educational activities could include:
 - * Dealer meetings on marketing management and product use;
 - * Farmer crop production meetings;
 - * Educational crop production leaflets;
 - * Fertilizer demonstrations;
 - * Fertilizer field trials; and,
 - * Soil testing and advisory services.

Promotional campaigns using such media as the radio, newspapers, billboards and newsletters will be developed as a function of the true marketing organizations.

Where an integrated approach to fertilizer marketing is practiced, all end users (farmers) are usually supplied through the retail organization. However, there can be exceptions to this rule whereby the marketing organization will have house accounts for large farmers, plantations, etc. In such instances, prices to the large farmers are usually between the retailer wholesale price and the retail price. When distributors are allowed to sell directly to farmers, whether large or small, it has a tendency to disrupt the marketing system. To encourage the sale of fertilizers to large tonnage buyers quantity discounts are often applied. As an example, discounts by quantity sold could be as shown in Table 5.

Table 5. Example of Fertilizer Quantity Discounts

<u>Quantity/Tons</u>	<u>Discount %</u>
up to 75	full price
76 - 150	1.5
151 - 200	2.0
201 - 250 tons	2.5
251 and over	3.0

Large growers are not in the business to import fertilizers. An efficient fertilizer marketing system should be able to import and sell even to the very large growers, using the quantity discount concept, at a price lower than the large growers could obtain by importing.

Expansion of the Integrated Marketing System

In a country the size of Kenya, several integrated marketing organizations can operate. Each organization must be self-sufficient and pay for its marketing activities through the sale of products and services. Each organization should be autonomous and accountable for its profits and losses. The marketing organization should operate on a commercial basis. Even if the Government has a parastatal it should operate on a self-sustaining basis and not be subsidized by the Government.

The number of marketing organizations that are required to cover all farming areas of Kenya and provide enough competition to keep fertilizer prices down and promote organizational efficiency, is dependent upon the tonnages to be sold, allowable margins, and the cost of services to be performed. A marketing organization must have enough product to sell to generate sufficient revenue to cover the marketing costs and have a reasonable profit. Marketing organizations will expand marketing networks and services as enough funds are generated to do so. As a guideline, a fertilizer marketing organization providing full marketing functions on a national basis will require a minimum of 15,000 tons of product annually.

The integrated marketing system can expand by adding infrastructure and management personnel. There are many examples of integrated marketing organizations expanding their marketing infrastructure from sales of 250,000 tons of product to over 1 million tons. Marketing organizations that can effectively handle all marketing functions are available and ready to take on the fertilizer marketing responsibility in Kenya. The non-integrated marketing approach is not designed to encourage increased fertilizer use nor is it capable of providing the full marketing functions in the most cost efficient manner.

High-Analysis Fertilizers and Their Benefits

The USAID fertilizer program has focused on supplying DAP to Kenya. DAP is one of the highest nutrient carrying fertilizers on the market and contains 18% N, 46% P_2O_5 and 0% K_2O . There are 640 kgs of nutrients in each ton of DAP. As indicated in Table 6, in 1984/85 USAID donor fertilizer totaled 3,744 tons of N and 9,568 tons of P_2O_5 . USAID supplied fertilizer will increase to 5,400 tons of N and 13,800 tons of P_2O_5 in 1985/86. Both amounts are significant in terms of the overall contribution to crop fertilization. Most donor fertilizers fall within the high-analysis category. CAN although a desirable product from the standpoint of not reducing the soil ph, is not the most economic product available. Freight rates alone on low-analysis products increase the price per unit of nutrient to farmers.

As a result of the USAID program, farmers are able to purchase plant nutrients at a much lower price than available through alternative supply sources. For example, in Kitale under the present pricing structure, the cost per unit of nutrient (N and P_2O_5) combined in DAP totals KSh 9.2. Comparatively, the cost of N available through ammonium sulfate (21% N) and P_2O_5 through Single Superphosphate (18% P_2O_5) is KSh 14.2 and KSh 16.2 respectively. Another calculation for comparing nutrient cost would be to consider that Nitrogen in DAP is free and by comparing the P_2O_5 cost in DAP with that from SSP, it is still cheaper than KSh 3.4 per kg. The lower nutrient costs are largely due to freight rates and cost of production efficiency. Further, long supply lines make high-analysis DAP more favorable as compared to low-analysis fertilizers.

Table 6. Donor Fertilizers To Kenya

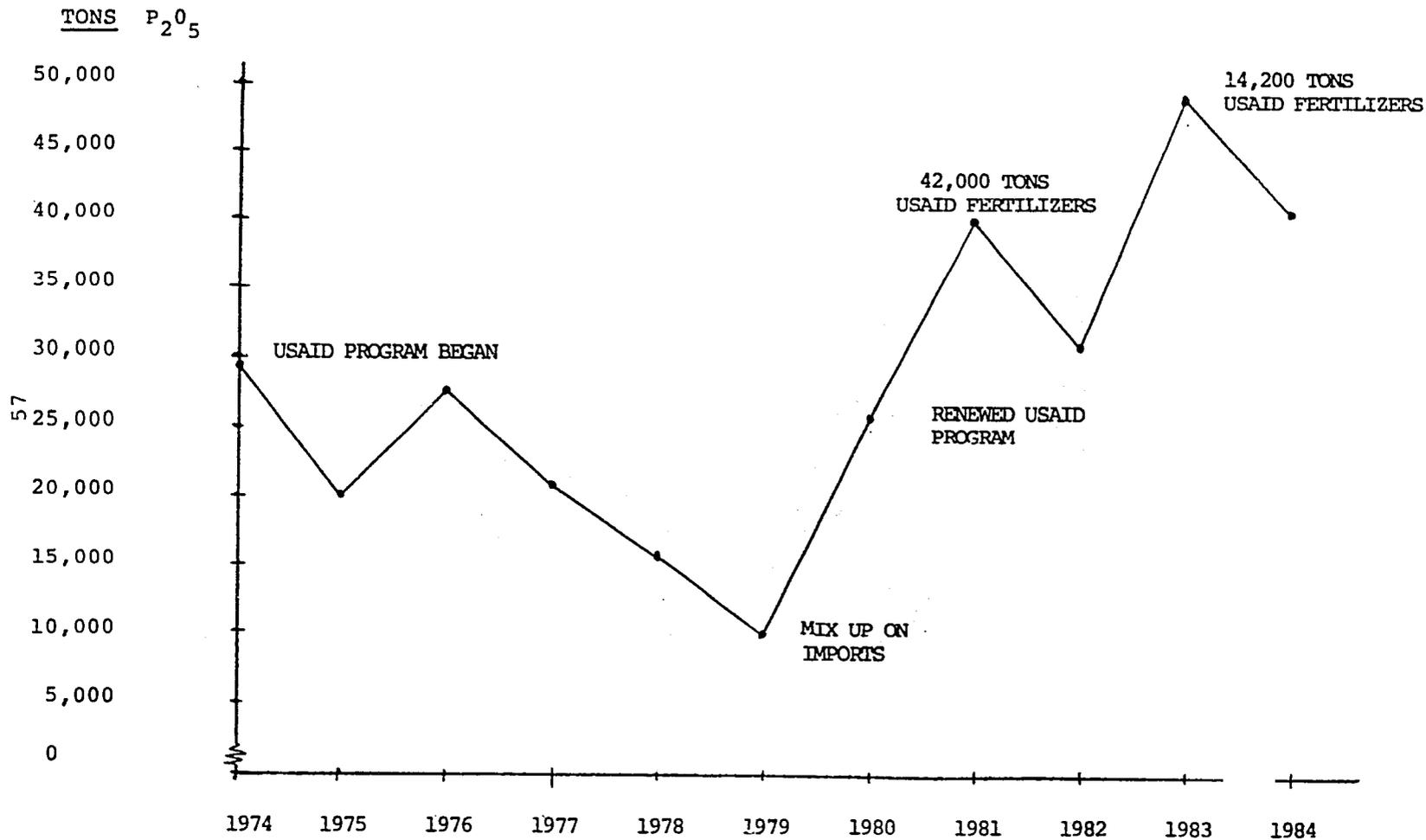
<u>Source</u>	<u>1984/85</u>			<u>1985/86</u>		
	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
Finland ^a	1,920	1,000	-	2,630	250	250
USA ^b	3,744	9,568	-	5,400	13,800	-
Netherlands ^c	2,600	-	-	5,200	-	-
Sweden ^d	-	-	-	2,000	2,000	-
Norway ^e	-	-	-	2,000	1,000	1,000
Japan ^f	510	510	510	1,400	3,450	850
FAO ^g	260	-	-	-	-	-
Denmark ^h	<u>2,500</u>	<u>2,500</u>	-	<u>4,250</u>	<u>2,750</u>	<u>750</u>
TOTAL	11,534	13,578	510	22,880	23,250	2,850

- a/ 5,000 tons 20-20-0 and 2,000 tons of urea in 1984/85;
5,000 tons of 25-5-5 + 5S and 3,000 tons of Urea in 1985/86.
- b/ 20,800 tons DAP in 1984/85 and 30,000 tons of DAP in 1985/86.
- c/ 10,000 tons CAN in 1984/85 and 20,000 tons of DAP in 1985/86.
- d/ None in 84 Crop Year; 10,000 tons of 20-20-0 in 1985/86.
- e/ None in 84 Crop Year; 10,000 tons of 20-10-10 in 1985/86.
- f/ 3,000 tons 17-17-17 in 1984/85 and 5,000 tons of each 17-17-17 and MAP in 1985/86.
- g/ 1,000 tons CAN in 1984/85.
- h/ 12,500 tons 20-20-0 in 1984/85 and 10,000 tons of 20-20-0, 5,000 tons of 20-10-10, and 5,000 tons of 20-5-5 + 5S in 1985/86.

The suitability of DAP for use on most soils and crops grown in Kenya has been well documented. DAP is considered an excellent "starter" fertilizer for maize, grains, most vegetables and some estate crops. In addition, most of these crops require a second application of fertilizers. In the case of maize, wheat and most vegetable crops, the second application should be a fertilizer material high in nitrogen. Unfortunately, due to limited supply availability, as well as inadequate financial resources, "top dressing" is not a widespread practice, particularly among small farmers.

The USAID fertilizer program is making a significant contribution to increased consumption of nitrogen and phosphate. Table 7 shows that nitrogen consumption has more than doubled in the last 10 years, increasing from 19,400 tons in 1974 to 46,873 tons in 1984. Phosphate (P_2O_5) consumption has increased by 38% from 1974-1984, increasing from 29,300 tons in 1974 to 40,455 tons in 1984. Potassium (K_2O) consumption, due to the soil being reasonably fortified with this element, has remained low, ranging from 2,385 tons of K_2O in 1975 to a maximum of 9,000 in 1978 and again in 1980. Potassium consumption dropped to 3,612 tons of K_2O in 1984.

Figure 5 shows phosphate consumption in Kenya for the period 1974-1984 and highlights selected features that contributed to the severe fluctuations. The USAID fertilizer program started in 1974 and with the supply of 24,000 tons of product, including 10,500 tons of TSP and 5,250 tons of DAP; both materials are high-analysis fertilizers. Most of the TSP was consumed during the following seasons while the DAP was consumed in the 1974 crop year. An additional 5,000 tons of TSP and 2,950 tons of compound fertilizers arrived for the 1975 crop year.



Source: FAO Data 1975-1983. Data for 1984 compiled from MOALD statistics.

Figure 5. Tons of P₂O₅ Consumed in Kenya 1975-1984

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The decline in phosphate consumption in 1979 (Figure 5) resulted basically from a mix-up in MOALD importing procedures. Only 38,300 tons of nutrients were imported and used during the 1979 crop season. The renewal of the USAID fertilizer programs in 1980 resulted in 42,000 tons of product being delivered for the 1981 crop season and another 21,000 tons for the 1982 crop season. Hence, the USAID program provided a major thrust to increased phosphate consumption.

In September 1982, USAID contributed 14,200 tons of high-analysis fertilizers (DAP 9,200 tons and MAP 5,000 tons) that was consumed during the 1983 crop season. This helped to establish the highest peak consuming period of P_2O_5 to date.

Another area where the USAID fertilizer program is making a significant contribution to food production at the small farm level is with the bag per acre practice on maize. Although the official MOALD recommendation calls for 60-60-0 per hectare, the practice at the small farm level is considered to be one 50 kg bag of fertilizer per acre. Since the one bag is more often becoming DAP, the farmer is applying more nutrients per acre. For example, one bag of SA provides 10.5 kg of N and no P_2O_5 - whereas one 50 kg bag of DAP provides 9 kgs of N and 23 kgs of P_2O_5 . The soils are deficient in P_2O_5 in Kenya. It is very possible that one 50 kg bag of DAP will produce more than twice the maize that one bag of SA, CAN, Urea or 20-10-10 will produce. The value/cost ratio for DAP on phosphate deficient soils is highly in favor of DAP.

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Table 7. Nutrient Tons in Kenya 1975-1985

<u>Nutrient/Year</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Nitrogen	19,400	21,882	22,417	25,234	25,416	20,100	26,700	37,000	34,200	51,000	46,873
P ₂ O ₅	29,300	20,227	27,262	21,196	16,497	10,200	25,900	40,000	30,800	49,100	40,455
K ₂ O	4,000	2,385	4,217	5,042	9,089	8,000	9,000	5,800	4,000	6,700	3,612
TOTAL	52,700	44,494	53,896	51,472	51,002	38,300	61,600	82,800	69,000	86,800	90,940

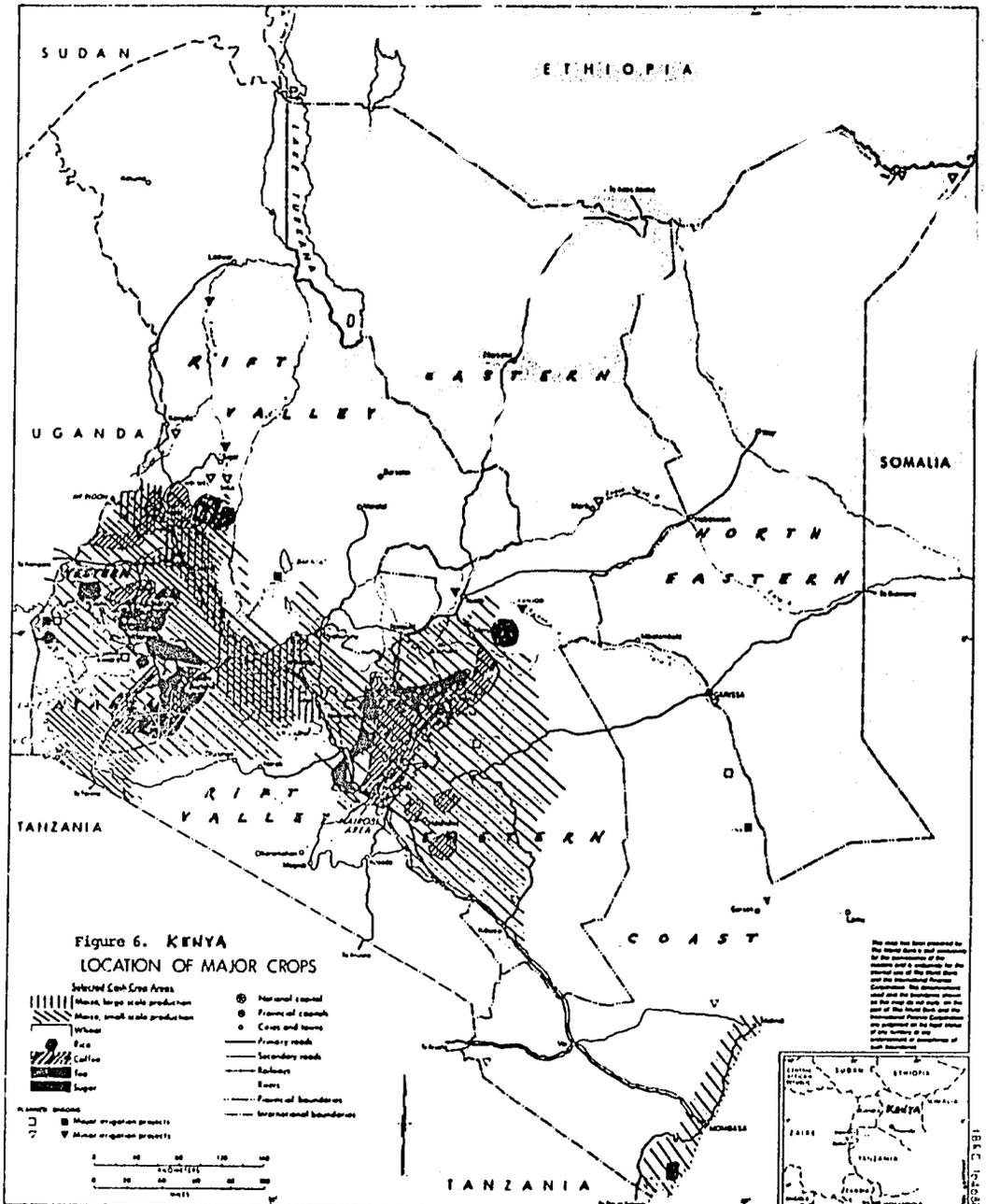
Source: FAO Data 1975-1983 compiled by TVA and data for 1984-1985 provided by MOALD

Bulk Blending and Bagging

Economical in-country bagging of bulk fertilizers and blending materials to produce compound fertilizers is a distinct possibility. In 1985, the 20,800 tons of USAID DAP was imported in bulk and bagged at MEA Ltd in Nakuru. Mr. Henry Ogola, Managing Director, MEA Ltd, calculated their bagging cost at KSh 305 per ton - producing a net saving over imported bagged DAP of KSh 495 per ton. Importing fertilizers in bulk and bagging in-country can produce a net saving to Kenya in foreign exchange and cost of the products.

The location for bulk bagging should be studied. If bagged in Nakuru, it is estimated that approximately 30% of the fertilizer would have to be transported back to the eastern portion of the Central Province and to the Eastern Province. If bagging is done in Mombasa or in the southern portion of the Eastern Province, double freight would not be involved. The location of Mombasa and Nakuru in relation to the major cropping areas is shown in Figure 6.

A study should be made to determine the feasibility of blending fertilizer materials to produce compound fertilizers in Mombasa or the southern section of the major cropping areas. The economics of bulk blending appears favorable in other countries in Africa having a similar situation as Kenya.



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V. The Need For a Master Plan

Drifting Without Purpose

A master plan for guiding the development of a viable fertilizer industry in Kenya should be developed. The industry and particularly the all important marketing components are not being developed in such a manner as to allow for increased fertilizer consumption. The following weaknesses and constraints exist in the fertilizer industry and must be addressed if the fertilizer sector is to progress.

- a) Actual demand by products, nutrients, seasonality, and areas have not been established.
- b) Current nutrient response curves for principal crops and value/cost ratios have not been calculated.
- c) Supplies of fertilizers are not reaching the distributor, retailer/stockist and farmer in time for planning, and proper use.
- d) Supplies of fertilizers are not reaching many small farmers.
- e) A major communication gap exists between the research organizations - extension personnel - retailers and farmers on product use.
- f) Educational programs on fertilizer use are not readily available to retailers and farmers.
- g) Distributors are not carrying out full scale marketing programs through retailers/stockists to effectively reach the farmers.
- h) Distributors without facilities and capabilities for down stream marketing receive import licenses and allocations.

All of these deficiencies would be corrected given a system comprised of integrated fertilizer marketing organizations. They can correct these problem areas individually and/or collectively. In order to develop a more efficient system, a master plan must be developed; hence, a plan of action to establish the type marketing organizations and viable fertilizer industry that will help Kenya accomplish its overall goal of efficiently increasing food production. A master plan should deal more with structuring and institutional building to support marketing than with the daily operational procedures of marketing.

The study team gave consideration to several possible ways of creating a master plan, gaining acceptance of the plan, and implementation.. After discussions at the ministry level, and with most fertilizer distributors and consultants it was agreed that the procedures used successfully in several developing countries would have application in Kenya.

Role of USAID

A leader is needed to promote the master plan and ensure that it is implemented. USAID has a reputation for assisting agriculture production programs in developing countries and is the best candidate to provide this leadership.

USAID, with a strong program, can direct its fertilizer to support specific objectives in the master plan. AID can also be effective in gaining support for the plan from other donors, the World Bank, MOALD, research organizations, the National Fertilizer Association and distributors.

Gaining support for a master plan does not appear to be a difficult task. Most will welcome a plan of action, some can be forced to accept it, and others will follow the leader. USAID, with a small task force of about 3 marketing staff and support from the AID Mission, can provide the required leadership.

Type of System Required

Which fertilizer marketing system is best for Kenya? Should it be a non-integrated government dominated system or should it be an integrated system designed along the commercial approach? Kenya, in the past, had a successful integrated fertilizer marketing system. People in the trade remember this operation and it would not be difficult to return to this type of system. Several distributors are attempting to build integrated marketing systems for chemicals, farm equipment and seed, as well as for fertilizers. The technical know-how to build integrated marketing systems along commercial lines is available in Kenya. With the advanced stage of development in Kenya, a fully integrated marketing system appears to be the most appropriate.

The Plan

The actual plan must be developed in cooperation with the participants as events unfold. The plan itself depends upon the procedures selected for implementation. One possible approach for implementing such a plan would be to gain permission from the GOK to remove import restrictions on

fertilizers and have an immediate free market situation. Most importers would rush to import large quantities of fertilizers. Importers without a marketing network to reach the farmer would not survive. In the long run, the efficient marketing organizations would prevail. Most people surveyed agreed this would be a quick way of creating good marketing systems but they also thought that the Government would not endorse such a plan. Most agreed, and the study team concurs, that a better approach would be to show the Government that a few fertilizer marketing organizations with good downstream marketing networks can serve Kenya efficiently and effectively. When this is demonstrated, the import restrictions can be completely removed on fertilizers. At that time, all organizations that wish to enter the fertilizer business and compete should be welcomed.

Key features for a master plan include the following:

- a) Create an effective national fertilizer association. By-laws of the association should reflect the intentions of building an effective fertilizer industry in Kenya. The by-laws should also include provisions for educational programs, support for fertilizer research and promotional activities. A membership fee of several thousand shillings would be appropriate to cover the association's operating expenses. Membership should come from the fertilizer industry, fertilizer researchers and Government agencies involved in the fertilizer trade. A plan for ex-officio or sustaining membership can also be developed.

- b) Commence a reward plan for granting allocations (includes licenses for imports of fertilizers to only those marketing organizations) that can effectively market fertilizers. A list of suggested criteria for selecting the marketing organizations is given in the recommendations. Each year the organization that does the best job of marketing fertilizers will be rewarded with more fertilizer tonnage to market. This will help to stimulate competition. Each year USAID should fund an independent study team to evaluate the marketing efforts of each organization.

- c) The fertilizer marketing organization selected for the master plan should be an autonomous integrated marketing firm that can perform all marketing functions with respect to: product, price, place and promotion. The methods of ownership should not be a determining factor. However, each firm must be capable of sustaining itself.

- d) Fertilizer supplies should be committed to the selected firms on a 3 year basis. This is essential if firms are to properly plan their marketing activities. Donors and the Government should be able to develop a 3 year supply plan.

- e) The role of the Government in the master plan should be established. The Government should continue to monitor the fertilizer situation and guarantee competition at the farmer level. If funds or supplies become limited, the Government can free up these constraints. The Government should develop a quality control service. Product analysis and weights should be tested and

regulated. The Government can establish the maximum fertilizer selling price based on a cost of marketing formula. The Government should monitor the selling prices and eliminate overcharging.

- f) The Government should provide support to fertilizer marketing organizations, manufacturers, and distribution of fertilizers for a more economical supply and marketing system. Improved systems should be supported by feasibility studies.

Time Frame For Implementation

The time period for implementing the master plan is important. It should not be too short in duration because organizations and staff must have time for efficient development. Similarly, it should not be too long so as to lose sight of the long-term goals of the organization. A suggested schedule for implementation of the master plan would be as follows:

Year 1 - 1985

- * USAID committed to accepting leadership role;
- * Draft a master plan document;
- * Present plan to all donors and Government;
- * Obtain commitment to a plan by donors and Government;
and,
- * Encourage the continued formation of the National Fertilizer Association.

Year 2 - 1986

- * Commence a three year allocation for system selected marketing organizations that can meet the marketing criteria;
- * Finalize an operational National Fertilizer Association;
- * In cooperation with donors, MOALD, fertilizer researchers and marketing organizations commence educational programs on fertilizer marketing. Programs should be designed for marketing organization field staff, distributors, retailers/stockists and farmers;
- * Carryout an independent study to determine the effectiveness of each marketing organizations' marketing programs; and
- * The Government should complete quality control units and plans for monitoring the industry.

Year 3, 1987 - Year 5, 1990

- * Continue activities started in year 2;
- * Continue monitoring marketing activities of selected marketing organizations;
- * Bring in new marketing organizations that demonstrate marketing capability;
- * Provide adequate fertilizer supplies to meet effective demand. Good marketing organizations will be capable of forecasting demand at the grassroots (farmer) level; and,
- * Encourage marketing organizations to study the most economical sources of fertilizer supply

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Year 6 - 1991

- * Remove fertilizers from a restricted, licensed basis and allow free importation by all marketing organizations; and
- * The Government should continue to pursue previously established monitoring activities.

VI. Recommendations

The following recommendations for improving the USAID/Kenya fertilizer programs are divided into two categories: (1) Short-Term - those recommendations that can be implemented within the next 2 years and will have quick benefits after implementation commences. (2) Long-Term - covers recommendations that require more planning and coordination with Government, distributors and donors of fertilizer. The long term recommendations are those that can be implemented between 3 and 5 years.

1. Short-Term: 1-2 Years

- a) Planning: Ensure a timely supply of the proper types and quantity of fertilizers through more efficient planning:

USAID can have an immediate and significant impact on the planning process for fertilizer procurement under donor supply programs.

- b) Supply: USAID should require that the GOK, develop a procedure for developing a two year fertilizer demand forecast by product, by district, and by seasonality by use. The forecast should be completed by June 1 of each year and cover the subsequent two fiscal years (i.e. July 1 - June 30). The forecast should be submitted to all donors as well as members of the National Fertilizer Association.

USAID should require that the GOK submit a procurement request not later than July 31 for the long rains and March 31 for the short rains. These specific dates should be emphasized as the last date to secure USAID fertilizers. Actual delivery dates for USAID fertilizer should be in November and December to meet demand during the long rains and August to meet demand in short rains. As soon as the expected delivery date is known, the National Fertilizer Association should be advised of the types and quantities of fertilizers to be received and the expected date of arrival. In addition, the CAMC advertisements should be made in the three major Kenyan newspapers regarding fertilizer quantity, type and expected dates of arrival.

- c. Prices: The actual formula to be used in establishing prices is beyond the scope of this study. However, based upon discussions with Dr. Michael Schluter, pricing consultant to the MOALD, careful consideration should be given to the pricing mechanism he has developed. Regardless of the pricing structure adopted, it is of great importance to announce fertilizer prices well in advance of the cropping seasons. Ceiling prices should be established and reviewed semi-annually, and revised at that time if necessary (i.e. the time periods should be July 1 - December 31 and January 1 - June 30). The prices to be effective for the above-mentioned periods should be submitted to the National Fertilizer Association and published in the local news media in early November to cover the period November-June and late June to cover the period July - October.

USAID should monitor and encourage the Government's compliance with the planning recommendations as expanded private sector involvement in the fertilizer sector is critically dependent on a more stable market environment.

- d) Criteria for Marketing Organizations: Allocate USAID donor fertilizer to only qualified distributors.

USAID should require that its fertilizer be allocated to only those firms which are dedicated to developing a long term commitment to fertilizer marketing. A number of firms contacted have made such a commitment and USAID donor fertilizer should be awarded to those firms. The criteria should not be excessively stringent in the beginning so as not to preclude too many distributors. However, as the fertilizer program progresses, the criteria should be reviewed and modified as necessary.

Initially, the following criteria should be established for distributors to receive AID fertilizer:

- * At least 35% of sales must be to so-called village stockists;
- * The marketing organization must have in place, or be willing to develop, a distribution network;
- * Distributors must have storage capacity for at least 50% of the quantity of fertilizer to be sold in any one season.

- * Agree to display on premises and encourage retailers to display, official fertilizer prices;
- * Must be capable of securing the necessary bank guarantees;
- * Hold membership in the National Fertilizer Association; and,
- * Agree to develop educational programs (seminars, demonstration plots, etc.) aimed at increasing the fertilizer knowledge of stockists and farmers.

It should be stipulated that upon receiving an allocation of USAID fertilizer resale to another distributor is prohibited unless approved in advance by the GOK.

The USAID should periodically evaluate the performance of each distributor that receives USAID funded fertilizer. The evaluation should be an independent study and have one member from the new fertilizer advisory committee. Failure to comply with the pre-established criteria should result in the subject distributor being disallowed to receive future supplies of USAID fertilizer. The allocations of USAID funded fertilizers should be made as soon as possible after the expected time of arrival and retail prices have been determined.

- e) Small Bags: Bagging of 10,000 tons of DAP in 10 kg bags is discouraged. Although a market for the small bag is apparent, the size and the specific location of the market has not been adequately researched.

It is recommended that a total of 6,000 tons of USAID funded DAP be packaged in 10 kg bags and test-marketed through selected distributors. Both P.E. bags and polypropylene bags should be tested to determine which one is best under Kenyan conditions.

The 10 kg bags should be allocated to those distributors, that based upon the study team's evaluation, are best serving the interests of small farmers. However, in order to receive the DAP each distributor must agree to establish at least three test market areas for distribution of the product. The distributors should monitor the sales and report to the MOALD, USAID, and Fertilizer Association on the effectiveness of small bag. This information is necessary to better estimate the market for small bags.

The recommended distributors and tonnages to be allocated to each for packaging in 10 kg bags is shown in Table 8.

Table 8. Recommended Tonnage Allocation for a Small Bag Program

<u>Distributor</u>	<u>Tons of DAP</u>	<u>Number of Small Bags</u>
KGGCU	1,800	180,000
MEA	1,200	120,000
Orbit Chemical Co.	1,000	100,000
Devji Meghji	1,000	100,000
Safina	500	50,000
Supplies & Services	<u>500</u>	<u>50,000</u>
TOTAL	6,000	600,000

Each of the distributors to receive an allotment of the 10 kg bags should be given the option of receiving the DAP in bulk or bags. Several of the distributors; KGGCU, Mea, Devji Meghji, Orbit, Safina and Supplies and Services have indicated their ability to package in the small bag.

Sales of the 10 kg bag should also be monitored by MOALD.

Possibly one of the resident fertilizer consultants (i.e. Dr. Michael Schluter or Mr. Borris Tisminieszky) could be retained to conduct an indepth market research study on the small bag. The major focus of such a study would be to (a) determine the most appropriate bag size, i.e. 5 kg, 10 kg or 25 kg; (b) determining the most appropriate type bag, polypropylene, P.E., paper, etc; (c) the primary target market for which the small bag is most appropriate; (d) distributor and retailer margins on the small bags; (e) the effective demand for the small bag; and, (f) the effects of the small bag on crop yields.

- f). Consolidation of Government Committees: The fertilizer marketing functions currently assigned to the CAMC, the Fertilizer Advisory Committee, and the Fertilizer Coordination Committee should be consolidated and assigned to a single, functional body. The CAMC was originally established to deal with a range of products, including fertilizers. Hence, as it is likely to play a significant role in non-fertilizer

related matters, the CAMC should not be abolished. However, the critical importance of fertilizers to Kenya's welfare necessitates that fertilizer marketing be removed from CAMC's realm of responsibility.

The Fertilizer Advisory Committee should be abolished.

All fertilizer marketing functions under Government rule should be reassigned to a newly created and more effective Fertilizer Coordinating Committee. The Committee should be comprised of both Government and private sector representatives. A total of six committee members should be selected; one each from the MOALD, MOFP, and the Central Bank and three from the National Fertilizer Association. Without private sector participation on the Fertilizer Coordinating Committee, it is unlikely that a marketing network to reach the small farmer and provide information on the proper use of fertilizers will be met.

- g. Price Differential for Small Bags: It is recommended that USAID work with the MOALD to establish a price differential for the 10 kg bags compared to the 50 kg bags. The differential should be adequate to compensate for the increased cost of bags and the additional handling involved with the 10 kg bags. It is estimated that these costs will amount to about KSh 305 per ton for the bagging cost and KSh 15 per ton for additional handling. Hence the retail price for 50 and 10 kg bags of DAP in Nakuru would be as illustrated in Table 9.

Table 9. Suggested Price Differential for 50 and 10 kg Bags of DAP

<u>Size Bag/Kg</u>	<u>Retail KSh</u>	<u>KSh per kg of Product</u>
50	288.65	5.77
10 kg bag	60.9	6.09

Although farmers would be paying a slight premium for the small bags, the study team found that this was already the case where fertilizer was sold by the kilogram. It is not expected that the price differential will act as a deterrent to demand for the 10 kg bag.

- h. Development & Dissemination of Educational Literature: USAID should encourage the development of crop production leaflets for maize, wheat, cowpeas, potatoes, cotton, and vegetables. The leaflets should be prepared by the MOALD and/or research organizations based upon current research findings. The planting and fertilization instructions should be in both Swahili and English. The leaflets should be packaged in all 10 kg bags and also distributed to all marketing organizations for their use in educational programs and further distribution to stockists and farmers.

USAID could consider funds from the local currency special account to finance the development of the leaflets.

i. Expansion of Products Available Through USAID:

Subsequent USAID fertilizer programs in Kenya should encourage a more balanced fertilization program. In particular the program should involve more than a single fertilizer material. DAP is an excellent fertilizer for use at planting on most crops grown in Kenya. However, USAID should consider providing a high nitrogen carrying fertilizer such as urea to ensure that farmers have a suitable "top dressing" fertilizer.

Since most small farmers supply on a "basal dose" it is recommended that DAP represent the majority of USAID donor fertilizer. A suitable importation ratio would be 80% DAP and 20% for urea.

USAID should periodically confirm with the MOALD and various research institutions the products recommended for use in Kenya.

- j. Fertilizer Demand Forecasting: USAID should encourage the MOALD to develop a more realistic forecast of effective fertilizer demand. The forecast should include a projection of fertilizer demand by products, by crops, district and seasonality of use. In the short term the MOALD will make the demand forecast. In the long run, however, the demand forecast is a function of the marketing organizations.

One of the fundamental requirements for developing the three required forecasts, is historic data. Although a suitable time series is apparently unavailable through the Government, Chemical Engineering Consultants have started a very impressive data base.

Development of a suitable data base will require a considerable amount of time. In the interim, the forecasts should be based on estimates from fertilizer experts, (i.e. National Fertilizer Association members such as KGGCU, Devji Meghji and Mea Ltd.).

- k. Personnel for Planning: USAID should station a marketing specialist at the MOALD to assist with training personnel in data collection, creating proforma instruments for collecting and reporting fertilizer data. The position should be for one year and should include assisting distributors in providing data. USAID should encourage the MOALD to employ at least one additional staff member to be assigned solely to developing a data base on fertilizer use.
1. Establish a Trust Fund: The special account fund at CSFC should be converted to a trust fund with disbursements to be made by USAID. USAID should, in collaboration with the MOALD, MOFP and National Fertilizer Association, use the funds on projects designed to foster improved fertilizer marketing and agricultural production. Specific programs for funding are:

- * Development of crop production/fertilization leaflets based on current research findings;
- * Marketing research study on small bags;
- * Educational seminars on fertilizer use;
- * Training courses on fertilizer marketing management and fertilizer use for marketing organization staff and stockists, to be held in Kenya;
- * Visits of MOALD and MOFP staff and private sector distributors to successful fertilizer projects in other countries such as Nigeria and India;
- * To support an independent study to determine the effectiveness of marketing organizations in meeting marketing criteria; and,
- * Special projects (i.e. formation of a functional National Fertilizer Corporation, exchange programs, guest lecturers, etc.).

2. Long-Term: 3-5 Years

- a. Pricing Structure: The GOK should establish a fertilizer pricing structure that will encourage sales through retailers. The recommendation in the Dutch funded pricing study should provide guidelines for determining prices. Specific features to include are:
 - * Donor and commercial DAP should have the same selling price in the market place.
 - * Prices should not change more often than twice per year. Prices should be determined and announced each November for sales during the long rains (December-June) and late June for sales during the short-rains (July-November).

- * Based on constant 1985 World market prices of DAP a wholesale marketing margin of approximately 25% of the C&F value is needed to cover all costs plus a wholesaler profit of at least 5%.
 - * The retail marketing margin will be 10% of the wholesale price FOB. The retailer will cover marketing cost with the allowable margin.
- b. Long Term Supply: Allocate DAP tonnages to qualified distributors for a period of 3 years to enable fertilizer planning and marketing development at both the wholesales and retail level.
- c. Master Plan: Prepare a strategic master plan for developing a viable fertilizer industry in Kenya. Guidelines should be developed in cooperation with the participants.
1. USAID is in a position to provide the leadership for developing the plan. USAID fertilizers should be directed towards implementing the plan.
 2. Other fertilizer donors, Government, fertilizer research institutions, the National Fertilizer Association and distributors can be recruited to support the plan.
 3. Guidelines:
 - * Create an effective National Fertilizer Association.

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- * Start a reward system for awarding fertilizers to those firms that have the capability of marketing fertilizers to different segments of the farming community.
- * Develop integrated autonomous marketing organizations that can be self-sustaining and perform the total marketing package of determining product, price, place and promotion functions.
- * Fertilizer supplies should be committed on a 3 year basis to allow for planning on a commercial basis.
- * Establish the role of Government in providing regulatory functions for quality control on guaranteed analysis, weight, selling prices, recommendations and competition.
- * Establish time frames for developing the master plan by years.
- * Develop fertilizer marketing courses to be taught by the wholesaler (marketing organization headquarters) and Egerton College. Courses should include:

- Components of marketing
- Salemanship
- Effective communications
- Fertilizer use
- Forecasting
- Management techniques
- Market development
- Role of the retailer

- * Assist with the establishment of fertilizer research to determine the most appropriate fertilizer for use as a starter and top dressing for major crops, on major soils, and ecological zones.
- * Establish a market research study to determine the most suitable small bag size, i.e. 10 kg, 20 kg, 25 kg, etc. This study should be started in year 1 of the short term recommendations and should be completed within three years.

4. Policy Change:

Currently decisions regarding fertilizer supplies, allocations, and pricing are finalized at the Permanent Secretary and Office of the President level. Middle level management in the MOALD and MOFP appear to be in agreement that a change from a distribution to an integrated marketing system is needed. They further agree that an effective marketing system will pay dividends in increased food production and savings in foreign exchange. Although in agreement that a change is needed they cannot make the change. The Kenya Mission should work at the appropriate GOK level to effect the necessary policy to support an effective integrated marketing system.

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A P P E N D I C E S

LIST OF PEOPLE AND ORGANIZATIONS CONTACTED

A. USAID	Jim Goggin	Nairobi
	David Lundberg	Nairobi
	Barry MacDonald	Nairobi
	Dwight A. Smith	Nairobi
	John Thomas	Nairobi
B. Ministry of Finance & Planning	Donald Kimutai	Nairobi
C. Ministry of Agriculture & Livestock Development	John Karanja	Nairobi
	A.K. Ingosi	Eldoret
	B.M. Walela	Eldoret
	J.K. Ng'eno	Kericho
D. Consultants	Peter Kimuyu	Nairobi
	Elias H. Okoth	Nairobi
	Michael Schluter	Nairobi
	Borris Tisminieszky	Nairobi
E. Soils Department University of Nairobi	V.P.X. D'Costa	Nairobi
	J. Ssali	Nairobi
F. Distributors		
Abcon	Zeph G. Mbugua	Nairobi
	Edward Njoroge	Nairobi
BenChem Co. Ltd	Benson Gathera	Kitale
Devji Meghji & Bros Ltd	V.D. Patel	Nairobi
FarmChem Ltd	Stephen K. Mulinge	Nairobi
Farming Agricultural & General Sales (FAGS)	Dick Kamau	Nakuru

LIST OF PEOPLE AND ORGANIZATIONS CONTACTED

KGGCU	J.K. Senteu	Nakuru
Mea Ltd	Henry Ogola	Nakuru
	E.M. Muriuki	Nakuru
Murang'a Farmers Coop.	Stanley C. Muchiri	Murang'a
	Simon M. Kigo	Murang'a
	Obadiah Njehia	Murang'a
Musola	Lawi K. Kiplagat	Nakuru
Orbit Chemical Industries Ltd	Asho Chandoria	Nairobi
	Anil Parlikar	Nairobi
	Bernard C. Mucheke	Kitale
	Ted Ayres	Nairobi
Safina Ltd	John B.M. Muya	Nairobi
Supplies & Services Ltd	J.P. Mehta	Nakuru
Tofas	Arthur Njage Mate	Nairobi
G. Farmers	D.M. Rocco	Nakuru
	Anne Njeri	Kitale
	Wainaina	Kitale
	J.H.S. Mayer	Kitale
	Kimaru Somoe	Soy
H. Retail Outlets		
Stockist	Mkulima Ag. Store	Bondeni
Stockist	Orbisport	Nakuru
Stockist	George W. Male	Makutano
Stockist		Tarakwa
Stockist	Discount Hardware and Ag. Supplies	Eldoret
Stockist	S.N. Gitur Fert. & Animal Feed	Eldoret

LIST OF PEOPLE AND ORGANIZATIONS CONTACTED

Branch	Mea Ltd	Eldoret
Branch	KGCCU	Eldoret
Stockist	Chepkorio Fert. Store	Eldoret
Stockist	Bandabtai Wholesalers Ltd	Eldoret
Branch	KGCCU	Kitale
Stockist	New Elgon Wholesalers	Kitale
Stockist	Gadher Enterprises	Kitale
Stockist	Chekobei General Agents	Eldoret
Branch	KGCCU	Kapsabet
Stockist	Lubadada Farm Store	Vihiga
Branch	KGCCU, J.M. Wambugu	Kisumu
	Moses Wanbugu	Kisumu
Stockist	Lucas Bett	Kapsoit
Stockist	Wesley Koech	Kapsoit
Stockist	Phillip Koech	Kericho
Branch	KGCCU, Danie Okebiro	Kericho
Cooperative Society	Londiani Farmers Coop	Londiani
	Society	
Stockist	James K. Njuguna	Londiani
Cooperative	Nakuru District	
	Cooperative Union	Nakuru

PROCEDURES ON PROCUREMENT AND IMPORTATION
OF AID FERTILIZERS

1. Types of Fertilizers

1.1. The Permanent Secretary, Ministry of Agriculture and Live-stock Development in consultation with the Fertilizer Advisory Committee will determine annually the overall types and quantities of the national fertilizer requirement. He will thereafter out of the total national requirement indicate to the Director, External Aid Division the types and quantities of fertilizers which are popular for his guidance when he negotiates for aid from donor agencies. Priority will however be given to the types which are in greater demand at any given time so as to save the Government from incurring substantial expenses on storage. Negotiation with donors will therefore be restricted to the following types of fertilizers:-

- (i) NPK - 20:20:0
- (ii) NPK - 20:10:10
- (iii) NPK - 25:5:5 + 55
- (iv) NPK - 17:17:17
- (v) DAP - 18:46:0
- (vi) UREA - 46%
- (vii) SA
- (viii) CAN

1.2. Procurement

1.2.1. Donors will be requested to procure the needed fertilizers by open tender. They will also be requested to pay freight and insurance up to the port of Mombasa.

1.2.2. Since sufficient facilities for bagging large quantities of fertilizers are not presently available in Kenya, most of the aid fertilizers will be imported in bags and the level of bulk importation will be limited to the amount which can be efficiently handled at the existing bagging facilities.

1.3. Timing of Shipments

It is essential that aid fertilizers should be available to farmers in the country a month or two before the planting season. Fertilizers intended for application during the long rains should be available to farmers in January and February. Similarly fertilizers intended for short rains season should reach in August and September.

1.4. Clearing and Forwarding of Fertilizers

The Government Coast Agent will clear all aid fertilizers and its expenses will be reimbursed by the Cereals and Sugar Finance Corporation or the Paymaster General at cost from the counter-part fund account.

- 1.4.2. Bills of lading and other relevant documents must be addressed to the Government Coast Agent and copied to the Treasury and Cereals and Sugar Finance Corporation.
- 1.4.3. The Government Coast Agent will be responsible for storing all unsold fertilizers in warehouses owned by Government and Parastatals until legally disposed of.

2. Allocation of Fertilizer to Distributors

- 2.1. Immediately shipment is confirmed and distributor and consumer prices approved, the consignment shall be advertised in the local press for allocation and sale by the Commodity-Aid Allocation and Monitoring Committee (CAMC) to the interested fertilizer distributors.
- 2.1.1. Distributors will be given fourteen days to produce bank guarantees or banker's cheques for the quantities allocated to them. If after that period allottee has failed to present a bank guarantee or a banker's cheque to CAMC, the allocation shall be reallocated and sold by CAMC to another eligible distributor.

2.2. Bank Guarantees

- 2.2.1. All bank guarantees shall be on a standard format. The format will be forwarded with letters of offer as soon as allocations are made by CAMC to the allottees.
- 2.2.2. Duration of bank guarantees shall be 120 days from the date of guarantee. No extension shall be permitted without the recommendation of CAMC and the approval of the Treasury in writing.

3. Determination of Prices

- 3.1. Delays in determining distributor and consumer prices in the past affected not only distribution of fertilizers but also substantial unnecessary expenses in storage were incurred.
- 3.1.1. The Price Controller shall immediately bills of lading and other documents are received calculate distributor and consumer prices and pass them to the Ministry of Agriculture and Livestock Development and the Office of the President for clearance. This must be done urgently to enable procedures on Allocation of Fertilizer as detailed in para. 2 to commence immediately. All these must be done before the ship docks at Mombasa.
- 3.1.2. Distributor prices shall be C.I.F. Mombasa if importation is in bags and f.o.r. Nakuru after bagging of bulk fertilizer.

4. Accounting

- 4.1. Proceeds of sale fertilizers shall be paid into an agreed account between the donor and the Government.
- 4.1.1. Where a donor has no preferences a special account shall be opened in the Paymaster General group of accounts.

- 4.1.2. A register of all bank guarantees shall be maintained by the Co-ordinator of the Commodity Aid Programme. 14 days before the bank guarantee expires, in all cases where the distributor has not paid for the delivered fertilizer, a demand note shall be addressed to the bank which provided the guarantee requiring immediate payment to the extent of the amount guaranteed or the balance unpaid.
- 4.1.3. The use of all funds in special accounts in the Paymaster General or with the Cereals and Sugar Finance Corporation shall be reviewed quarterly by CAMC. Accounts Controller, Treasury will be co-opted in the Committee during review.

5. Commodity Aid allocation and Monitoring Committee (CAMC)

- 5.1. The Membership of CAMC shall be as follows:-

Office of the President	-- One Member
Ministry of Finance & Planning	-- Two members (i.e. Chairman and Secretary/Co-ordinator)
Ministry of Commerce and Industry	-- One member
Ministry of Agriculture and Livestock Development	-- One member
Cereals and Sugar Finance Corporation	One member

5.2. Functions

- 5.2.1. To allocate fertilizers to distributors country-wide.
- 5.2.2. To discuss and consider the co-ordinator's reports on proper accountability of proceeds of sale, bank guarantees and re-allocation of fertilizers.
- 5.2.3. To discuss and consider the co-ordinator's report on use of funds as agreed between the Government and donors.
- 5.2.4. Where a donor has no preferences of projects to be financed, CAMC to discuss and agree the allocation of such funds to projects with the Directors of Budget and Fiscal and Monetary Departments.
- 5.2.5. To liaise with the Attorney-General's Chambers for legal advice on matters pertaining to importation and allocation of aid fertilizers.
- 5.2.6. To recommend to the Permanent Secretary to the Treasury on how to dispose of damaged or sub-standard fertilizers in warehouses or bagging factories.

REPUBLIC OF KENYA
MINISTRY OF FINANCE AND PLANNING

THE TREASURY
P. O. BOX 30007
NAIROBI

Ref. No., 19....

LETTER OF FERTILIZER OFFER

The Commodity Aid Allocation and Monitoring Committee has recommended that you be offered metric tonnes of fertilizer, type at price payable to the Kenya Government of Kenya Shillings per metric tonne C&F Mombasa/Free on Rail Nakuru#

You are hereby given fourteen days from the date hereof to produce a bank guarantee or pay cash for the quantity allocated to you. If within that period no guarantee is received, the quantity allocated to you will be re-allocated to someone else without reference to you. The duration of your bank guarantee is one hundred and twenty days only from the date of its issue.
No extensions shall be permitted.

For: Commodity Aid Allocation & Monitoring Committee

Delete whichever is inapplicable

The Cereals and Sugar Finance Corporation,
P. O. Box 60250,
NAIROBI.

Date

BANK GUARANTEE

Having noted that the GOK has allocated our client
M/S metric tonnes
..... of fertilizer, type
at a price payable to the Kenya Government of KShs.
per metric tonne. CIF Mombasa/FOR Nakuru# and at the request
of the said client and on
behalf of the client we
..... do hereby irrevocably and unconditionally
guarantee the payment to Cereals and Sugar Finance Corporation
of Treasury Building, P. O. Box 30007, Nairobi KShs.
(amount in words) at your
first written demand 7 days before the due date stating that
our client has not paid all or part of the total amount
guaranteed. For the purposes of this guarantee the expiry date
is 19.....

Name & Designation
Ref. (Power of Attorney)

Name & Designation
Ref. (PA)

Delete where inapplicable

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IMPORT PLAN

1985/86 DONOR AID FERTILIZER

Between now and January, 1986, the following fertilizers are expected from donor countries.

Country	Type of Fertilizer	Quantity in metric tons	Month of Arrival in Kenya
1. Finland	NPK 25:5:5+5%S	5,000 mt.	August 1985
	Urea 46%N	3,000 mt.	August 1985
2. U.S.A.	DAP	10,000 mt.	September 1985
	DAP	20,000 mt.	December 1985
3. Netherlands	CAN 26%N	20,000 mt.	September 1985
4. Sweden	NPK 20:20:0	10,000 mt.	September 1985
5. Norway	NPK 20:10:10	10,000 mt.	September 1985
6. Japan	NPK 17:17:17	5,000 mt.	September 1985
	MAP	5,000 mt.	January 1986
7. Denmark	NPK 20:20:0	10,000 mt.	January 1986
	NPK 20:10:10	5,000 mt.	January 1986
	NPK 25:5:5+5%S	5,000 mt.	January 1986
TOTAL		108,000 mt.	

SUMMARY

<u>Fertilizer Type</u>	<u>Quantity</u>
1. NPK 25:5:5+5%S	10,000 mt.
2. NPK 20:20:0	20,000 mt.
3. NPK 20:10:10	15,000 mt.
4. NPK 17:17:17	5,000 mt.
5. CAN 26%N	20,000 mt.
6. DAP	30,000 mt.
7. MAP	5,000 mt.
3. Urea 46%N	3,000 mt.
TOTAL	108,000 mt.

1985/86 FERTILIZER IMPORT PLAN

Fertilizer Type	Total Requirements		Total	Stock as of 31st 1985	Anticipated Donor Imports 1985/86 Crop Year	Anticipated Commercial Imports 1985/86 Crop Year	Total	Balanced Shortfalls
	Aug-Dec	Jan-July						
DAP	15,000	35,000	50,000	3,000	30,000	20,000	53,000	+3,000
MAP	5,000	--	5,000	--	5,000	--	5,000	--
TSP	5,000	5,000	10,000	--	--	10,000	10,000	--
20:20:0	5,000	15,000	20,000	4,000	20,000	10,000	34,000	+14,000
SSP	2,000	--	2,000	--	--	2,000	2,000	--
SA	--	5,000	5,000	11,794	--	5,000	16,794	+11,794
CAN	10,000	25,000	35,000	--	20,000	15,000	35,000	--
ASN	5,000	5,000	10,000	--	--	10,000	10,000	--
Urea	8,000	10,000	18,000	2,000	3,000	18,000	23,000	+5,000
25:5:5+5%S	22,000	8,000	30,000	--	10,000	30,000	40,000	+10,000
20:10:10	2,000	8,000	10,000	7,500	15,000	10,000	32,500	+22,500

Fertilizer Type	Total Requirements Aug-Dec	Jan-July	Total	Stock as of 31st 1985	Anticipated Donor Imports 1985/86 Crop Year	Anticipated Commercial Imports 1985/86 Crop Year	Total	Balanced Shortfall
17:17:17	5,000	--	5,000	--	5,000	--	5,000	--
15:15:6	--	2,000	2,000	--	--	2,000	2,000	--
6:18:20	--	2,000	2,000	--	--	2,000	2,000	--
SOP	1,000	1,000	2,000	--	--	2,000	2,000	--
MOP	2,000	--	2,000	--	--	2,000	2,000	--
Others	500	5,000	1,000	--	--	1,000	1,000	--
TOTAL	87,500	21,500	209,000	28,294	108,000	139,000	275,294	+65,294

FERTILIZER IMPORTS, 1983/84

YEAR	FERTILIZER TYPE	DONOR	COMMERCIAL	(3+4)
(1)	(2)	(3)	(4)	(5)
1983/84	DAP	10,000	30,574	40,574
	MAP	5,000	11,045	16,045
	NPK 20:20:0	8,000	16,700	24,700
	TSP/SSP	-	12,564	12,564
	SA	-	14,426	14,426
	CAN	-	44,506	44,506
	ASN	-	28,791	28,791
	SOP	-	1,368	1,368
	UREA	-	5,494	5,494
	NPK 6:18:20	-	1,238	1,238
	NPK 20:10:10	-	10,901	10,901
	NPK 25:5:5+5s	10,000	12,098	22,098
	NPK 17:17:17	-	2,500	2,500
	NPK 15:15:6	-	1,000	1,000
TOTAL		33,000	183,205	216,205

NAMES OF FIRMS IMPORTING FERTILIZER

1983/84	1984/85
1. KFA 2. Mea Ltd 3. Devji Meghji 4. Elgon Chemicals 5. Muranga Co-operatives 6. Agrimac (ACM) Ltd 7. KNFC 8. KTDA 9. Continental Management 10. Kleenways Chemicals 11. Twiga Chemicals 12. Farmchem Chemicals 13. Ciba Geigy	KGGCU Mea Ltd Devji Meghji Elgon Chemicals Muranga Co-operatives Agrimac (ACM) Ltd Ms. Bawazir KTDA Crop Protection Cleenways Chemicals Nyali Chemicals Ltd Farmchem Kenya Swiss Chem & Business Systems

G.O.K.
FORM/FERT/QI

GOVERNMENT OF KENYA
MINISTRY OF AGRICULTURE

APPLICATION FORM FOR FERTILIZER IMPORTATION QUOTA

(Conditions at the back of this form must be read before signing)

1. Name of Applicant
2. a) Postal Address
b) Telephone number
3. Head office
(Physical Address)
City/Town
Town
Name of Building and L.R. Number
4. Append a detailed description of your experience and knowledge of fertilizer industry.
.....
.....
5. Types and volume of fertilizer to be imported, state whether the fertilizer will be imported in bags or bulk (Minimum 1000 mt)

Month of planned importation	Type	Quantity Mt.
.....
.....
.....
.....
.....
.....
.....
.....

6. Crop to which the fertilizer will be put (if space not enough please append)
.....
.....
.....

7. a) Area of Distribution
- b) State whether distribution will be done by applicant or by agent
8. Possible country or countries of origin
9. Supplies/Manufacturers:
 - Full address
 - Telephone Number
 - Telex Number
10. State stocks and types of fertilizer held at time of application
11. Applicants distribution facilities
 1. Number of vehicles and types
 2. Number of stores and location
 3. Other facilities
12. Other business
13. Names of Directors
14. Proforma document should be returned to the Ministry of agriculture by
I confirm that the above information is correct to the best of my knowledge.
Signature
- Date
- Designation
- Company Seal

CONDITIONS

1. After the quota has been issued, the following reports must be supplied to the Ministry of Agriculture:
 - a) Application for imports from Ministry of Commerce
 - b) Feal Number and date received.
 - c) L.C. and date opened
 - d) Position of fertilizer e.g. being loaded, on high sea at Mombasa etc.
 - e) Any other useful information
2. Every importer is reminded to note that quota allocation is valid between July 1st to June 30th the following year. Any outstanding importation by June 30th will be automatically cancelled.
3. Monthly returns on stock position will be submitted to the Ministry of Agriculture stating type, quantity and location of fertilizer.
4. The Ministry of Agriculture or any other authorised Government Officer will have access to documents or premises related to fertilizer.
5. a) Applicant should note that legal action will be taken on anyone giving false information.
b) Failure to comply with the above conditions will result in automatic cancellation of the quota.

BEST AVAILABLE DOCUMENT

APPENDIX E

1. Safina Ltd.	1,000	1,000	A
2. Tofas Ltd.	8,000	300	C
3. Quality Agricultural	500	200	C
4. Sunset Investments	2,000	300	C
5. Orbit Chemicals	2,500	500	B
6. Pawman Trading Co. Ltd.	1,500	500	A
7. Chihi Chemicals	5,000	500	A
8. KGFGCU*	8,000	6,500	A
9. Tetraco Co. Ltd.	3,000	200	C
10. Nyali Chemicals*	4,000	1,000	A
11. Supplies & Services	1,500	300	A
12. Jarmary Co. Ltd.	1,000	500	A
13. Belmont Trading Co.	2,000	300	C
14. Good Enterprises	1,000	500	A
15. Lagum Distributors	5,000	500	B
16. Nyathura Distributors	500	500	B
17. Abcon Ltd.	1,500	500	A
18. FarmChem Ltd*	1,000	1,000	A
19. Panorama Agencies	6,000	1,500	A
20. Farming Agric. Gen. Sales	5,000	300	C
21. Agrico Kenya Ltd	500	500	B
22. Athi Greens Ltd	5,000	200	C
23. Chem & Business*	3,000	1,500	A
24. Nyara Chemicals	3,000	200	C
25. Musoia Agric. Contractors	1,000	200	C
26. Njugi Import & Export Agency	1,000	200	C
27. Grain Farmers of Kenya*	6,000	500	B
<hr/>			
TOTAL (METRIC TONS)	<u>79,500</u>	<u>21,000</u>	

* From first ship (Zoella Lykes). The rest would be allocated from the second ship (Nauticus Mexico)

MINISTRY OF FINANCE AND PLANNING

THE TREASURY,
P.O. Box 30007,
NAIROBI.
8th February, 1985.

Ref. PC 87/D1/E (182)

Kenya Farmers' Association.

All Distributors.

All Sub-Distributors.

District Commissioners (with enough copies for
distribution to D.O.s).

Kenya National Federation of Co-operatives (with enough
copies for distribution to Co-operative Societies).

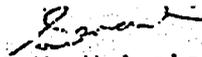
Kenya National Trading Corporation.

All Assistant Price Controller

FERTILIZER PRICES

The Government has approved the fertilizer prices shown on the
attached schedules for 1985.

These are maximum prices which include transport costs and
should not be changed without prior Government approval.


S.W. Wainaina (Misa)
PRICE CONTROLLER

Copy to:

The Permanent Secretary,
Office of the President,
NAIROBI.

The Permanent Secretary,
Ministry of Agriculture and
Livestock Development,
NAIROBI.

The Permanent Secretary,
Ministry of Commerce & Industry,
NAIROBI.

The Permanent Secretary,
Ministry of Co-operative Development,
NAIROBI.

FERTILIZER	FERTILIZER PRICES									
	MOMBASA		KWALE		KILIFI		WUNDANYI		NAIROBI	
	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg
SA 21%	2505.70	125.30	2555.90	127.00	2599.65	130.00	2745.45	137.25	2799.90	140.00
CAN 26%	3151.20	159.55	3241.40	162.05	3205.15	164.25	3430.95	171.55	3405.40	174.25
ASN 46%	3309.50	165.50	3360.00	168.00	3403.75	170.20	3549.55	177.50	3602.00	180.20
Urea	4713.70	235.70	4763.90	238.20	4807.65	247.40	4953.45	247.65	5007.90	257.40
20-20-0	4515.95	225.00	4566.15	228.30	4609.90	230.50	4755.70	237.00	4810.15	240.50
S.O.P.	5574.50	220.70	5626.70	201.35	5670.45	203.50	5816.25	290.00	5870.70	293.55
M.O.P.	4519.50	225.05	4569.70	220.50	4613.45	230.05	4759.25	237.95	4813.70	240.70
20:10:10	4212.00	210.65	4263.00	213.00	4312.75	215.65	4452.75	222.65	4507.00	225.35
25:5:5+5a	4311.65	215.60	4361.05	210.10	4405.60	220.30	4551.60	227.60	4605.05	230.30
15:15:6+4MgO	4303.90	215.20	4354.10	217.70	4397.55	219.90	4543.05	227.20	4590.10	229.90
SSP	2433.20	121.65	2483.40	124.15	2527.15	126.35	2673.15	133.65	2727.40	136.35
DAP	5410.95	270.95	5460.15	273.40	5512.90	275.65	5650.90	282.95	5713.15	285.65
	MACHAKOS		KITUI		EMBU		MERU		NAROK	
	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg
SA 21%	2056.45	142.00	3002.20	150.10	2970.75	140.35	3073.35	153.65	3151.10	157.55
CAN 26%	3541.95	177.10	3607.70	184.40	3664.25	183.20	3750.05	187.95	3836.60	191.05
ASN 46%	3660.55	183.05	3706.30	190.30	3782.05	189.15	3877.45	193.05	3955.20	197.75
Urea	5064.45	253.20	5210.20	260.50	5106.75	259.35	5201.35	264.05	5359.10	267.95
20-20-0	4066.70	243.35	5012.45	250.60	4909.00	249.45	5003.60	254.20	5161.35	250.05
S.O.P.	5927.25	296.35	6073.00	303.65	6049.55	302.45	6144.15	307.20	6221.90	311.10
M.O.P.	4070.25	243.50	5016.00	250.00	4992.55	249.60	5007.15	254.35	5164.90	250.25
20:10:10	4563.55	220.15	4709.30	235.45	4605.05	243.30	4700.45	239.00	4850.20	242.90
25:5:5+5a	4062.40	233.10	4000.15	240.40	4704.70	239.25	4879.30	243.95	4957.05	247.05
15:15:6+4MgO	4654.05	232.75	4000.40	240.60	4776.95	230.05	4871.55	243.55	4949.30	247.45
SSP	2703.95	139.20	2929.70	146.50	2905.25	145.30	3000.05	150.05	3070.60	153.95
DAP	5769.70	280.50	5915.45	295.75	5892.00	294.60	5906.60	299.30	6064.35	303.20

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FERTILIZER	KAJIADO		NAKURU		KAPSABET		KERICHO		THIKA	
	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg
SA 21%	2092.55	144.60	2059.90	143.00	3052.20	152.60	2973.10	140.65	2005.90	140.50
CAN 26%	3570.05	170.90	3545.40	177.25	3737.70	106.90	3650.60	102.95	3495.40	174.75
ASN 46%	3696.65	104.05	3664.00	103.20	3056.30	192.00	3777.20	100.05	3614.00	100.70
Urea	5100.55	255.00	5067.90	253.40	5260.20	263.00	5161.10	259.05	5017.90	250.90
20-20-0	4902.00	245.15	4070.15	243.50	5062.45	253.10	4903.35	249.15	4020.15	241.00
S.O.P.	5963.35	290.15	5930.70	296.55	6123.00	306.15	6003.90	302.20	5600.70	294.05
M.O.P.	4906.35	245.30	4073.70	243.70	5066.00	253.30	4906.00	249.35	4023.70	241.20
20:10:10	4599.60	230.00	4567.00	220.35	4750.30	237.95	4600.20	234.00	4517.00	225.05
25:5:5+5a	4690.50	234.90	4665.05	233.30	4050.15	242.00	4779.05	230.95	4615.05	230.00
15:15:6+4MgO	4690.75	234.55	4650.10	232.90	4050.40	242.50	4771.30	230.55	4600.10	230.40
SSP	2020.05	141.00	2707.40	139.35	2979.70	140.95	2900.50	145.05	2737.40	136.05
DAP	5005.00	200.30	5773.15	200.65	5965.45	290.25	5006.35	294.30	5723.15	206.15
	LAMU		GALOLE		TAMBACH		BARINGO		KITALE	
	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg
SA 21%	3215.00	160.75	3215.00	160.75	3002.50	150.10	3046.40	152.30	2979.90	149.00
CAN 26%	3900.50	195.00	3900.50	195.00	3600.00	104.40	3731.90	106.60	3665.40	103.25
ASN 46%	4019.10	200.95	4019.10	200.95	3006.60	190.35	3050.50	192.50	3704.00	109.20
Urea	5423.00	271.15	5423.00	271.15	5210.50	260.50	5254.40	262.70	5107.90	259.40
20-20-0	5225.25	261.25	5225.25	261.25	5012.75	250.65	5056.65	252.05	4990.15	249.50
S.O.P.	6205.00	314.30	6205.00	314.30	6073.30	303.65	6117.20	305.05	6050.70	302.55
M.O.P.	5220.00	261.45	5220.00	261.45	5016.30	250.00	5060.20	253.00	4993.70	249.70
20:10:10	4922.10	246.10	4922.10	246.10	4709.60	235.50	4753.50	237.65	4607.00	234.35
25:5:5+5a	5020.95	251.05	5020.95	251.05	4000.45	240.40	4052.35	242.60	4705.05	239.30
15:15:6+4MgO	5013.20	250.65	5013.20	250.65	4000.70	240.00	4044.60	242.25	4770.10	230.90
SSP	3142.50	157.10	3142.50	157.10	2930.00	146.50	2973.90	140.70	2907.40	145.35
DAP	6120.25	306.40	6120.25	306.40	5915.75	295.00	5959.65	290.00	5993.15	294.65

FERTILIZER	ELDORET		KAPENGURIA		NYAHURURU		HOMA BAY		KISII	
	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg
SA 21%	2939.90	147.50	3033.05	151.65	2079.90	144.00	3100.20	159.40	3191.60	159.60
CAN 26%	3025.40	101.25	3710.55	105.90	3565.40	170.25	3073.70	193.70	3077.10	193.05
ASN 46%	3744.00	107.20	3037.15	191.05	3604.00	104.20	3992.30	199.60	3995.70	199.00
Urea	5147.90	257.40	5241.05	262.05	5007.90	254.40	5396.20	269.00	5399.60	270.00
20-20-0	4950.15	247.50	5043.30	252.15	4090.10	244.50	5100.45	259.90	5201.05	260.10
S.O.P.	6110.70	300.55	6103.35	305.20	5050.65	297.55	6259.00	312.95	6262.40	313.10
M.O.P.	4953.70	247.70	5046.05	252.35	4093.65	244.70	5202.00	260.10	5205.40	260.30
20:10:10	4647.00	232.35	4740.15	237.00	4507.00	220.35	4095.25	244.75	4090.65	244.95
25:5:5+5a	4745.05	237.30	4039.00	241.05	4605.05	234.30	4094.10	249.70	4997.50	249.05
15:15:6+4MgO	4730.10	236.90	4031.25	241.55	4670.10	233.90	4906.35	249.30	4909.75	249.50
SSP	2067.40	143.35	2960.55	140.00	2007.40	140.35	3115.65	155.00	3119.05	155.95
DAP	5053.15	292.65	5946.30	297.30	5793.15	209.65	6101.40	305.05	6104.00	305.25
	KISUMU		UKWALA/STIAYA		NANYUKI		KAKAMEGA		BUNGOMA	
	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg
SA 21%	2939.90	147.00	3031.35	154.05	2079.90	144.00	3039.75	152.00	2979.90	149.00
CAN 26%	3025.40	101.25	3706.05	100.35	3565.40	170.25	3725.25	106.25	3005.40	103.25
ASN 46%	3744.00	107.20	3035.45	194.25	3604.00	104.20	3043.05	192.20	3704.00	109.20
Urea	5147.90	257.40	5209.35	264.45	5007.90	254.40	5247.75	262.40	5107.90	259.40
20-20-0	4950.15	247.50	5091.60	254.60	4090.10	244.50	5050.00	252.50	4990.15	249.50
S.O.P.	6010.70	300.55	6152.15	307.60	5950.65	297.55	6110.50	305.50	6050.65	302.55
M.O.P.	4953.70	247.70	5095.15	254.75	4093.65	244.70	5053.50	252.65	4993.65	249.70
20:10:10	4647.00	232.35	4700.45	239.40	4507.00	229.35	4746.05	237.35	4607.00	234.35
25:5:5+5a	4745.05	237.30	4007.30	244.35	4605.05	234.30	4045.70	242.30	4705.05	239.30
15:15:6+4MgO	4730.10	236.90	4079.55	243.95	4670.10	233.90	4037.95	241.90	4770.10	238.90
SSP	2067.40	143.35	3000.05	150.45	2007.40	140.35	2967.25	140.35	2907.40	145.35
DAP	5053.15	292.65	5994.60	299.75	5793.15	209.65	5953.00	297.65	5093.15	294.65

FERTILIZER	BUSIA		ISIOLO		NYERI		MURANG'A		KERUGOYA	
	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg
SA 21%	3139.65	157.00	3035.45	151.75	2914.00	145.70	2009.90	140.50	2071.50	143.55
CAN 26%	3025.15	191.25	3720.95	106.05	3590.50	170.95	3495.40	174.75	3557.00	177.05
ASN 46%	3943.75	197.20	3039.55	191.95	3710.10	105.90	3614.00	100.70	3675.60	103.00
Urea	5347.65	267.40	5243.45	262.15	5122.00	256.10	5017.90	250.90	5079.50	253.95
20-20-0	5149.95	257.50	5045.65	252.30	4924.25	246.20	4820.15	241.00	4801.75	244.10
S.O.P.	6210.40	310.50	6106.15	305.30	5904.75	299.25	5800.65	294.05	5942.25	297.10
M.O.P.	5153.40	257.65	5049.15	252.45	4927.75	246.40	4823.65	241.20	4805.25	244.25
20:10:10	4046.75	242.35	4742.50	237.10	4621.05	231.05	4517.00	225.05	4570.55	220.90
25:5:5+5a	4945.00	247.30	4841.35	242.05	4719.90	236.00	4615.05	230.00	4677.40	233.05
15:15:6+4MgO	4937.05	246.90	4833.60	241.70	4712.15	235.60	4608.10	230.40	4669.65	233.45
SSP	3067.15	153.35	2962.90	149.15	2841.45	142.05	2737.40	136.05	2790.95	139.95
DAP	6052.90	302.65	5940.65	297.45	5827.20	291.35	5723.15	286.15	5704.70	289.25
FERTILIZER	KIAMBU		SAGANA		CHEMELIL		NAIVASHA		SOTIK	
	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg	Per Ton	P. 50kg
SA 21%	2020.60	141.05	2049.90	142.50	2929.90	146.50	2049.90	142.50	3077.10	153.05
CAN 26%	3506.10	175.30	3535.40	176.75	3615.40	180.75	3535.40	176.75	3762.60	180.15
ASN 46%	3624.70	101.25	3654.00	102.70	3734.00	106.70	3654.00	102.70	3801.20	194.05
Urea	5020.60	251.45	5057.90	252.90	5137.90	256.90	5057.90	252.90	5205.10	264.25
20-20-0	4830.05	241.55	4860.15	243.00	4940.15	247.00	4860.15	243.00	5007.35	254.35
S.O.P.	5091.35	294.55	5920.65	296.05	6000.65	300.05	5920.65	296.05	6147.05	307.40
M.O.P.	4034.35	241.70	4063.65	243.20	4943.65	247.20	4063.65	243.20	5090.05	254.55
20:10:10	4527.75	226.40	4557.00	227.05	4637.00	231.05	4557.00	227.05	4704.15	239.20
25:5:5+5a	4626.60	231.35	4655.05	232.00	4735.05	236.00	4655.05	232.00	4803.00	244.15
15:15:6+4MgO	4610.05	230.95	4640.10	232.40	4720.10	236.40	4640.10	232.40	4875.25	243.75
SSP	2740.15	137.40	2777.40	130.05	2857.40	142.05	2777.40	130.05	3004.55	150.20
DAP	5733.90	286.70	5763.15	290.15	5843.15	292.15	5763.15	286.15	5990.30	299.50

FERTILIZER	MIGORI		MARALAL	
	Per Ton	P. 50kg	Per Ton	P. 50kg
SA 21%	3341.35	167.05	3191.90	159.00
CAN 26%	4026.05	201.35	3977.40	193.05
ASN 40%	4145.45	207.25	3996.50	199.00
Urea	5549.35	277.45	5399.00	270.00
20-20-0	5351.00	267.00	5202.10	250.10
S.O.P.	6412.10	320.60	6262.00	313.15
M.O.P.	5355.10	267.75	5504.00	275.25
20:10:10	5040.45	252.40	4890.95	244.95
25:5:5+5a	5147.30	257.35	4997.00	249.90
15:15:6+4MgO	5139.55	250.95	4993.05	249.50
SSP	3260.05	163.45	3119.35	155.95
DAP	6254.60	312.75	6105.10	305.25

ALLOCATION OF USAID DAP FERTILIZER

NAME OF DISTRIBUTOR	ADDRESS	QUANTITY ALLOCATED (METRIC TONS)
1. K.G.G.C.U. Co. Ltd.	P.O. Box 35 NAKURU	8,000
2. Panorama Agencies	P.O. Box 55301 NAIROBI	1,500
3. Supplies & Services	P.O. Box 462 NAKURU	1,200
4. Safina Enterprises	P.O. Box 72327 NAIROBI	1,000
5. Orbit Chemicals	P.O. Box 48870 NAIROBI	1,000
6. Mea Ltd.	P.O. Box 1018 NAKURU	1,000
7. Nyali Chemicals	P.O. Box 45797 NAIROBI	1,000
8. Affiliated Business Contacts Ltd.	P.O. Box 18511 NAIROBI	1,000
9. Farmchem Ltd.	P.O. Box 18407 NAIROBI	1,000
10. Agrico Kenya Ltd.	P.O. Box 1766 NAKURU	1,000
11. Musola Agri. Contractors	P.O. Box 1967 NAKURU	1,000
12. Tofas Ltd.	P.O. Box 57461 NAIROBI	800
13. Devji Meghji & Bros Ltd.	P.O. Box 62 RUIRU	500
14. Farming Agri. Gen. Sales	P.O. Box 1418 NAKURU	300
15. Nova Chemicals Ltd.	P.O. Box 18698 NAIROBI	300
16. Athi Greens Ltd.	P.O. Box 58000 NAIROBI	200
TOTAL		20,800

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BANK GUARANTEES DAP 18:46 FERTILIZER EX-USAID

Appendix G
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NAME OF DISTRIBUTOR	QUANTITY (METRIC TONS)	DATE GUARANTEED ISSUED	BANK ISSUING GUARANTEE	AMOUNT (KSHS)	DATE GUARANTEE EXPIRES.
. K.G.S.C.U.	6,500	22/3/85	Pan African Bank Limited	31,895,500	25/7/85
. Farmchem Limited	1,000	3/4/85	Standard Chartered Acceptances	4,907,000	2/8/85
. Supplies and Services	300	4/4/85	Standard Chartered Acceptances	1,472,100	3/8/85
. Abcon Limited	500	4/4/85	Jimba Credit Corporation	2,453,500	9/8/85
. Yofas Limited	300	9/4/85	Indo-Africa Finance	1,472,100	7/8/85
. Safina Limited	1,000	10/4/85	Union Bank	4,907,000	8/8/85
. Orbit Chemicals	500	11/4/85	Commercial Bank of Africa	2,453,500	9/8/85
. Mea Limited	1,000	12/4/85	Kenya Commercial Bank	4,907,000	11/8/85
. Nyali Chemicals	1,000	16/4/85	International Finance (K) Ltd.	4,907,000	14/8/85
. Musola Agricultural Contractors	1,000	17/4/85	Kenya Commercial Bank	4,907,000	17/8/85
. Athi Greens Limited	200	18/4/85	Jimba Credit Finance	981,400	18/8/85
. Farming Agric. Gen. Sales	300	19/4/85	Kenya Commercial Bank	1,472,100	19/8/85
. Abcon Limited	500	26/4/85	Jimba Credit Corporation	2,453,500	21/8/85
. Panorama Agencies	1,500	26/4/85	Trans-National Finance Co.	7,360,500	15/8/85
. Agrico (K) Limited	500	26/4/85	Cash	2,453,500	--

NAME OF DISTRIBUTOR	QUANTITY (METRIC TONS)	DATE GUARANTEED ISSUED	BANK ISSUING GUARANTEE	AMOUNT (KSHS)	DATE GUARANTEE EXPIRES.
. Agrico (K) Limited	500	29/4/85	Commercial & Industrial Credit	2,453,500	27/8/85
. K.G.G.C.U.	1,500	29/4/85	Pan African Bank Limited	7,360,500	29/8/85
. Tofas Limited	500	6/5/85	Indo-Africa Finance	2,453,500	4/9/85
. Orbit Chemicals	500	9/5/85	Commercial Bank of Africa	2,453,500	5/9/85
. Supplies & Services	900	9/5/85	Bank of Credit & Commerce	4,416,300	31/8/85
. Devji Meghji & Bros Ltd.	500	10/5/85	Commercial & Industrial Credit	2,453,500	6/9/85
. Nova Chemicals Ltd.	300	24/5/85	Standard Chartered	1,472,100	23/9/85
TOTAL	20,800			102,065,600	

THE USE OF FERTILIZERS IN CROP GROWING

Plants, like people, need food to grow. Plants take their food from the soil. Like children, plants need the correct kind and quantity of food to grow big, strong, and healthy. Many soils in Kenya are poor and cannot give the plants enough food, so it is necessary to add some plant food to the soil, so that the plants will have enough to eat and become big, strong, and healthy. FERTILIZERS are food for plants. There are many types of fertilizers because different plants like different foods.

Like children need ugali and nyama, plants need enough NITROGEN (written on fertilizer bags as N) and PHOSPHATE (written as P_2O_5) to grow big. Fertilizers contain one or both of these plant foods, depending on the FERTILIZER TYPE. Also, different fertilizer types contain different amounts of these foods. So, even though a fertilizer bag weighs 50 kg, only part of this weight is plant food, and the amount varies for each fertilizer type. The amount of plant food contained in a fertilizer bag is written on the bag and shown by the mark %. The food content of the most common fertilizers is given below:

ONE 50 kg BAG OF:		contains:	
TRIPLE SUPERPHOSPHATE	46% P_2O_5	- NO	NITROGEN and 23 kg of PHOSPHATE
SINGLE SUPERPHOSPHATE	18% P_2O_5	- NO	NITROGEN and 9 kg of PHOSPHATE
UREA	46% N	- 23 kg	of NITROGEN and NO PHOSPHATE
C.A.N.	26% N	- 13 kg	of NITROGEN and NO PHOSPHATE
A.S.N.	26% N	- 13 kg	of NITROGEN and NO PHOSPHATE
SULPHATE OF AMMONIA	21% N	- 10½ kg	of NITROGEN and NO PHOSPHATE
D.A.P.	18% N + 46% P_2O_5	- 9 kg	of NITROGEN and 23 kg of PHOSPHATE
M.A.P.	11% N + 52% P_2O_5	- 5½ kg	of NITROGEN and 26 kg of PHOSPHATE
20:20:0	20% N + 20% P_2O_5	- 10 kg	of NITROGEN and 10 kg of PHOSPHATE

When buying a bag of fertilizer, check the name and the food content which are written on the bag, then ask the price and calculate the COST PER KG OF PLANT FOOD. This will show you what type is cheapest.

EXAMPLE: On a bag of TRIPLE SUPERPHOSPHATE you will see the figure 46% P_2O_5 . The amount of plant food contained in the bag is half of 46, that is 23 kg of PHOSPHATE. If the price for this bag of fertilizer is 190 shillings, each kg of PHOSPHATE in the bag costs 190 divided by 23, which is shillings 8/26.

In the same way, C.A.N. 26% N contains 13 kg NITROGEN, and if the price per bag is shillings 150, each kg of NITROGEN costs shillings 11/54.

SOME SUGGESTIONS FOR FARMERS USING FERTILIZER ON MAIZE:

Fertilizers cost money. Farmers can increase their maize yields and therefore their profits by using fertilizers (ONE kg of NITROGEN or PHOSPHATE can give an additional 15 kg of maize). BUT to obtain the MOST benefit out of the fertilizer farmers should also use the proper farming practices. Some hints:

1. Prepare land early. Remove couch grass.
2. Buy the correct seed and fertilizer early. If enough money is available, the recommended amount of fertilizer for maize in most of Rift Valley Province is up to 60 kg PHOSPHATE (P_2O_5) at planting, plus 60 kg NITROGEN (N) for top dressing, per hectare. The usual amount applied is ONE BAG D.A.P. at planting plus ONE BAG C.A.N. when the maize is knee high (top dressing), per ACRE.
3. Use the hybrid seed recommended for your area.
4. Plant early. Late planting reduces yields, and greatly reduces the effect of fertilizers as well. If possible dry-plant just before the rains begin.
5. When dry-planting, plant the seed 7 to 10 cm (3 to 4 inches) deep. In wet soil, the depth should be 5 cm (2 inches).
6. Plant the correct plant population by using the correct spacing between rows and within rows, 25 cm (10 inches) between seeds in each row, and 75 cm (2½ feet) between rows.
7. At planting apply all the PHOSPHATE (P_2O_5) fertilizer. PHOSPHATE fertilizer must be put near and just below the seed in the planting hole or furrow, BUT NOT IN CONTACT WITH THE SEED. PHOSPHATE fertilizer should not be applied on the surface.
Suitable planting fertilizers are: D.A.P., M.A.P., TRIPLE SUPERPHOSPHATE, and 20:20:0.
8. If the field is weedy, start weeding as soon as the maize comes through, and keep the maize field clean until the maize is knee-high.
9. When the maize has 6 to 8 leaves (20 to 30 cm tall), remove excess or surplus plants.
10. Apply NITROGEN (N) fertilizer when the maize is knee-high (40 to 50 cm or 1½ feet tall) as a top-dressing. DO NOT throw fertilizer on the maize leaves.
Suitable top-dressing fertilizers are C.A.N., A.S.N., SULPHATE of AMMONIA, and UREA.
If UREA is used, it MUST be covered with soil.
11. Apply insecticides against stalk borer.
12. Several weeks before harvest clean out the maize cribs, to prevent weevils flying out to the field and infesting the cobs.
13. Harvest as soon as the maize is dry enough, and store it in a clean crib.
14. Protect the maize with the recommended insecticide. Many farmers lose one third of their maize in their stores because of insects, rats, dampness, and rots.

UTUMIAJI WA MBOLEA KATIKA KUKUZA MIMEA

Mimea, kama binadamu, huhitaji chakula ili kukua. Mimea hupata chakula chake kutoka kwa udongo. Kama watoto, mimea huhitaji chakula bora na cha kutosha ili ikue ikiwa na afya njema. Aina nyingi za udongo nchini Kenya si nzuri na haziwezi kuipatia mimea chakula cha kutosha kwa hivyo inabidi kuongeza chakula cha mimea katika udongo ili mimea ipate chakula cha kutosha na kukua vyema. MBOLEA ni chakula cha mimea. Kuna aina nyingi za mbolea kwani mimea tofauti huhitaji chakula tofauti.

Kama vile watoto huhitaji ugali na nyama, mimea huhitaji chakula cha kutosha cha aina ya NITROGEN (huandikwa kwenye mfuko kama N), na chakula cha aina ya PHOSPHATE (huandikwa kama P_2O_5) ili kukua. Mbolea huwa na aina moja au zote mbili za chakula kulingana na aina ya mbolea. Pia, aina tofauti za mbolea zina kiasi tofauti cha vyakula hivi. Kwa hivyo, ingawaje mfuko wa mbolea una uzito wa kilo 50, ni sehemu tu ya uzito huu ambayo ni chakula cha mimea, na kiasi hiki hutofautiana kulingana na kila aina ya mbolea. Kiasi cha chakula cha mimea kilichomo katika mfuko wa mbolea huandikwa kwenye mfuko na huonyeshwa kwa alama ya %. Kiasi cha chakula ndani ya mbolea za kawaida ni kama ifuatavyo:

KATIKA KILA MFUKO WA KILO 50 WA:

TRIPLE SUPERPHOSPHATE 46% P_2O_5 -	HAINA	NITROGEN bali ina kilo 23 ya	PHOSPHATE.
SINGLE SUPERPHOSPHATE 18% P_2O_5 -	HAINA	NITROGEN bali ina kilo 23 ya	PHOSPHATE.
UREA 46% N	- ina kilo 23 ya	NITROGEN na	HAINA PHOSPHATE.
C.A.N. 26% N	- ina kilo 13 ya	NITROGEN na	HAINA PHOSPHATE.
A.S.N. 26% N	- ina kilo 13 ya	NITROGEN na	HAINA PHOSPHATE.
SULPHATE OF AMMONIA 21% N	- ina kilo 10½ ya	NITROGEN na	HAINA PHOSPHATE.
D.A.P. 18% N + 46% P_2O_5	- ina kilo 9 ya	NITROGEN na	kilo 23 ya PHOSPHATE.
M.A.P. 11% N + 52% P_2O_5	- ina kilo 5½ ya	NITROGEN na	kilo 26 ya PHOSPHATE.
20:20:0 20% N + 20% P_2O_5	- ina kilo 10 ya	NITROGEN na	kilo 10 ya PHOSPHATE.

Wakati wa kununua mfuko wa mbolea, angalia jina na kiasi cha chakula ambacho kimeandikwa kwenye mfuko, kisha uliza bei na uhesabu BEI YA KILO MOJA YA CHAKULA CHA MIMEA. Hili litakuonyesha ni aina gani rahisi kuliko aina zingine.

MFANO: Kwenye mfuko wa mbolea aina ya TRIPLE SUPERPHOSPHATE utaona nambari 46% P_2O_5 . Kiasi cha chakula cha mimea kilichomo ndani ya huo mfuko ni nusu ya 46, yaani kilo 23 za PHOSPHATE. Ikiwa bei ya mfuko huu wa mbolea ni Sh.190/-, kila kilo ya PHOSPHATE katika mfuko ni 190 kugawanya na 23, ambazo ni Sh.8/26.

Kwa njia hiyo hiyo, C.A.N. 26% N ina kilo 13 NITROGEN, na ikiwa bei ya mfuko ni Sh.150/-, kila kilo ya NITROGEN inagharimu Sh.11/74.

MASHAURI KWA WAKULIMA WANAOTUMIA MBOLEA KWA KUKUZA MAHINDI:

Mbolea hugarimu pesa. Wakulima wanaweza kuongeza mazao yao ya mahindi na hivyo kuongeza faida zao kwa kutumia mbolea (KILO MOJA ya NITROGEN au PHOSPHATE inaweza kuongeza kilo 15 ya mahindi). LAKINI kupata faida ya JUU KABISA kutokana na mbolea wakulima lazima pia watumie njia bora za ukulima. Mashauri:

1. Tayarisha shamba mapema. Ondoa nyasi aina ya couch.
2. Nunua mbolea na mbegu zilizo sawa mapema. Iwapo kuna pesa za kutosha, kiasi cha mbolea ambacho ni kizuri kwa mahindi katika eneo kubwa la Mkoa wa Rift Valley ni hadi kilo 60 ya PHOSPHATE (P_2O_5) wakati wa kupanda, na kuongeza kilo 60 ya NITROGEN (N) wakati mahindi yana kimo cha magoti, kwa hecta moja. Kiasi cha kawaida kinachotumiwa ni MFUKO MMOJA wa D.A.P. wakati wa kupanda, na kuongeza MFUKO MMOJA wa C.A.N. wakati mahindi yana kimo cha magoti, kwa EKARI MOJA.
3. Tumia aina ya mbegu za hali ya juu iliyopendekezwa katika eneo lenu.
4. Panda mapema. Kuchelewisha kupanda hupunguza mazao, na pia hupunguza sana uwezo wa mbolea vilevile. Ikiwezekana panda kitambo kifupi kabla ya mvua kuanza.
5. Upandapo kabla ya mvua, panda mbegu sentimita 7 hadi 10 hivi (inchi 3 hadi 4) ndani ya udongo. Wakati udongo una maji, panda sentimita 5 hivi (inchi 2) ndani ya udongo.
6. Panda mimea kiasi kinachopendekezwa kwa kutumia kipimo sawa, sentimita 25 (inchi 10) kutoka mbegu hadi mbegu, na sentimita 75 (futi 2½) kutoka mistari hadi niwingine.
7. Wakati wa kupanda tumia mbolea ya PHOSPHATE (P_2O_5) yote. Weka mbolea ya PHOSPHATE ndani ya shimo au mtaro wa kupanda kwanza, unyunyizie mchanga kidogo na kisha uweke mbegu juu yake. ISIGUSE MBEGU. Mbolea ya PHOSPHATE isiweke juu ya udongo.
Mbolea za kupanda zinazofaa ni: D.A.P., M.A.P., TRIPLE SUPERPHOSPHATE, na 20:20:0.
8. Shamba likiwa na magugu, anza kupalilia punde tu baada ya mahindi kumea, na uendelee kuliweka shamba safi mpaka mahindi yamefikia kimo cha magoti.
9. Baada ya mahindi kutimiza majani 6 hadi 8 (sentimita 20 hadi 30 urefu), punguza mimea inayozidi.
10. Weka mbolea ya aina ya NITROGEN (N) wakati kimo cha mahindi kimefikia magoti (sentimita 40 hadi 50 au urefu wa futi 1½). Usiweke mbolea juu ya majani ya mimea.
Mbolea nzuri ya kutumia kwa wakati huu ni aina za C.A.N., A.S.N., SULPHATE of AMMONIA, na UREA. Ukitumia UREA, lazima uifunike kwa udongo.
11. Tumia dawa ya kuwaua wadudu wanaoharibu mimea ya mahindi (stalk borer).
12. Wiki kadha kabla ya kuvuna, safisha maghala ili kuzuia wadudu wanaoharibu nafaka wasiweze kuruka hadi shambani na kuharibu mahindi.
13. Muna mara tu baada ya mahindi kukauka vizuri na uyaweke katika ghala safi.
14. Tumia dawa ya wadudu wanaoharibu nafaka. Wakulima wengi hupoteza kiasi kikubwa cha nafaka katika maghala yao kutokana na wadudu, panya, mzizimo, na kuoza.