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The Situation of Farm Inputs in Somalia

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1. Introduction

Agriculture represents the largest productive sector of Somalia's economy contributing to about 60 percent of the GNP, providing employment and livelihood to more than seventy percent of the population, and generating almost 100 percent of export earnings. The other productive sectors (i.e. excluding services) contribute to approximately 10 percent of the GNP and employ only about 7 percent of the population. Increases in agricultural productivity and output are, thus, essential to economic growth of Somalia.

Despite its apparent relative importance, the agricultural sector in Somalia is however plagued by low productive capacity due to low levels of modern input use. Input supply and distribution has been neglected from the agricultural development schemes and projects. Lack of improved methods of production from the research and relative unavailability of modern necessary inputs to the small number of farmers who are at least willing to try alternative methods of production prevents considerable increases in productivity and production. Except for banana and some other industrial crops, the method of production of major food crops remains rather primitive with very little use of purchased inputs. Very few farmers employ modern methods of production and improved technical inputs such HYV seeds, fertilizer, chemical pesticides, etc.

policies and the liberalization of the trade of grains in the country. These latest government policy reforms are similar to those that are being implemented in many Sub-Saharan African countries where per capita food production has been declining for the last two decades. Undoubtedly, the agricultural price policy reforms and liberalization of the marketing of cereal grains in which the government initiated in 1982 had positively contributed to the relatively better performance of major food stable production in the country in the last five years. However, favorable price policies alone are not sufficient to spur the country's food production if such attempts are not coupled with favorable technological and institutional reform policies. The current National Extension Service lacks well-tried improved technologies that are properly suited to farmer conditions. This particular constraint of the agricultural extension program has been magnified by the continuous lack of farm inputs that are part of the few improved packages that it has been able to extend to farmers. Public institutions which have a monopoly on almost all kinds of crop and veterinary inputs have so far been unable to deliver inputs to farmers in time. No privatization efforts of agricultural input delivery has yet been made.

Preliminary results of the Food Security Project research on maize and sesame in the Shabelle regions of the country has shown that there is a wide disparity of maize and sesame yields achieved by farmers. Some maize farmers obtain more than 500 percent of the average farmer. There is no doubt that the technological possibility for very large increases in the output

of maize and other crops exists within the country. If these technologies are adopted by the farmers, the consequent rise in production would make significant contributions to improved food security in Somalia. To achieve this higher productivity, however, requires the use of technical inputs such as improved seeds, fertilizer, pesticides, irrigation water, tractors, water pumps, fuel, and others most of which are imported from abroad. The use and rate of application of purchased inputs in addition of their availability to farmers is also linked to the product prices and costs of the inputs. How does the availability and costs of farm inputs constrain the output of maize and other major food stables? What are the potentials for improving the availability of inputs at the right time and at affordable prices to farmers?

The present paper is based on informal interviews with input market channel participants carried out by the Food Security Project team between July and October of 1987 together with information on research trials and other experiences gained from the sample farmers the FSP has studies over the past 18 months. The objectives of the paper are to describe and diagnose the current agricultural input supply situation which caters specifically to maize and sesame producers and its major constraints. The paper is organized according to input categories, i.e. a) agro-chemicals, b) improved maize and sesame seed, c) credit, and d) farm machinery.

2. Agro-chemicals

2.1 Fertilizers

Fertilizer use in Somalia has been very low, in the order of 2000 to 4000 tons/year (COWIconsult,1984). Total fertilizer consumption per hectare of arable land in Somalia is about 270 times less than the world average, and 35 times less than the African average as can be seen from Table 1.

Table 1

Comparison of Fertilizer Use Rates
in Somalia and Some Other Regions in 1984

Region	Kg/Ha. of Agricultural Area	Kg/Ha. of Arable Land	Kg/Caput
World	27.1	85.3	26.8
U. S. A.	45.8	104.1	84.3
Asia	34.0	82.2	13.7
South America	5.5	23.4	12.7
Africa	3.5	18.5	6.5
Somalia	0.1	2.3	0.5

Source: FAO 1985 Fertilizer Yearbook, Vol. 35

Most of the domestic fertilizer consumption has so far been limited to the banana, sugar, and rice industries. These

industries are typically characterized of being large scale commercial or publicly-owned plantation farms.

The Food Security Project has found out that a large number of maize and sesame farmers in the Shabelle regions are aware of the benefits of fertilizer application. However, the number of farmers using fertilizer on maize during Der season 1987 were found to be 12 percent only. Fertilizer use on maize in the FSP sample is no doubt greater than the entire farmer universe due to the fact that the FSP sample includes participating farmers in the UNCDF credit in kind (in the form of fertilizer, insecticide, and improved seeds) programme. This percentage is no doubt much smaller in the more remote villages where there are no extension and input credit services. The national percentage of maize farmers using fertilizer might be in the order of 3-5 percent.

There are several reasons for the relatively lower fertilizer consumption by small farmers. Up until 1984, government food grain price policies have kept maize and sorghum prices artificially very low. This made the use of purchased input such as fertilizers uneconomical to grain producers. Fertilizer research and recommendations on food crops have been rather scarce and unsystematic. Furthermore, foreign exchange constraints have allegedly denied the country to import fertilizers and other essential agricultural inputs. The Central Bank foreign exchange allocations for farm inputs was up until

1984 a mere 1-2% of the total foreign exchange allocations (COWIconsult, 1984). The unavailability of agricultural inputs still continues to plague the country's agricultural sector even after the advent of the various bilateral programmes between Somalia and various Western donor agencies and governments (e.g. the Commodity Import Programme, the Agricultural Input Programme, and Agricultural Structural Adjustment Programme) intended to relieve the country of the foreign exchange constraints for importing necessary agricultural inputs.

2.2 Fertilizer Supply and Distribution

Urea is the most widely used type of fertilizer in the country. The construction of a Urea Factory in Mogadishu was completed in 1983 at total investment cost of US$ 70-80 million. The plant began operating in late 1984. The main objective for building the urea plant was to satisfy domestic consumption needs, and therefore solve the foreign exchange constraints that allegedly had previously curbed fertilizer use in the country. The plant has a capacity of 150 metric tons per day (i.e. approximately 50,000 MT/year or 4,500 MT/month). This capacity is more than 3 times the estimated demand of urea in the country for 1987. The surplus output of urea was originally planned for export (COWIconsult, 1984). Since it began its operation in late 1984 until it closed down in June 1986, the Urea Factory has never operated at more than 4 percent of its capacity output. In its

full year of operation in 1985, the plant has produced less than 2000 metric tons of urea. Up until June of 1986, it produced 1,626.2 metric tons only. No production is taking place this year due to lack of electric supply plus some other technical and management problems.

Instead of saving the country scarce foreign exchange, the Urea Factory became a great misfortune to Somalia and a typical 'white elephant'. The construction of the urea factory has absorbed more than 20 years of estimated foreign exchange cost of urea imports without yielding virtually nothing but a large external debt, and an impediment to the importation of highly needed urea after it has closed down because of the import ban that was put in place when the plant began operating. This resulted in lack of urea for Gu 1987 since nobody could import urea into the country.

There is virtually no domestic trade of fertilizers in the country where needy farmers can purchase their fertilizer requirements. The small quantity of fertilizer consumed is generally imported by either public or private institutions that are themselves the end users. The banana export trading agency, SOMALFRUIT, imports and distributes the amount of fertilizer needed by the banana farmers which are by far the largest fertilizer consumers. SOMALTEX, the domestic textile factory which also produces cotton for itself, the Juba Sugar Project, and Fanole Rice Project also import their own fertilizer

requirements. The FAO/UNCDF small farmer credit programme and FAO Fertilizer Program intended to demonstrate the benefits of fertilizer application to small food producing farmers have began distributing small quantities of urea to farmers in a few villages in the Shabelle regions on a credit basis. On paper, the Agricultural Development Corporation (ADC) is responsible on paper only for the importation and distribution of farm inputs including fertilizer and insecticides to farmers. The ADC has never been able to commercially import any farm inputs but has so far only distributed some pesticide gifts.

2.3 Economic Evaluation of Fertilizer on Maize

The use of fertilizers is probably the single most important factor for increased yields per hectare around the world. Much of the rise in crop yields in developed countries and more recently in the developing countries can be attributed to use of fertilizers. Fertilizers use is already important in the early stages of development, for practical and for psychological reasons: practical, because the returns are quick; and psychological, because few other inputs have such strikingly visible effects on the crop. The fertilize itself is a tangible input in which the relation between cause and effect is highly evident. For these reasons, fertilize application is considered a "lead" practice which predisposes the farmer to adopt other improved practices.

An important decision facing farmers of whether or not to apply urea on maize is based on the issue of how large is the net benefit derived in terms of higher yields and costs associated with using the input. Moreover, the prerequisite for fertilizer application is the availability of improved high yielding variety (HYV) that is responsive to fertilizer application. Farming systems experience from many developing countries shows that traditional farmers will initially adopt new technologies only when such new technology proves to yield net incremental value that exceeds at least three times the associated costs of the new method. The average incremental yield of maize for 64 demonstrations carried in the Shabelle regions during the Gu season of 1986 was 1063 Kg/Ha. for the improved SOMTUX variety at the application rate of 100 Kg/Ha. of urea (or 46 Kg. of Nitrogen per hectare). That is a dramatic response of approximately 22 Kg. of maize per 1 Kg. of nitrogen fertilizer. At the current net farmgate price of maize and nitrogen of about So. Sh. 14 and 50 respectively, the ratio of incremental net return to incremental cost is 6 : 1.

Table 2

Maize Fertilizer Response

Nitrogen Kg/Ha	Yield Kg/Ha	Incremental Yield Kg/Ha
0	2432	---
46	3495	1063
69	3831	1399

Source: AFMET/FAO Fertilizer Programme

2.4 Constraints

The lack of fertilizer prevents many farmers from using it. A relevant question to ask ourselves is how could fertilizer availability to farmers restricts its use and potential benefits to the country when anybody can find and buy Coca Cola or the finest Italian spaghetti in the most remote small village?

Private traders have a ready demand and a market and the financial incentives providing Coca Cola, cigarettes, spaghetti, etc. to rural areas. Fertilizer and other inputs trade has long been the domain of the public agencies, and these public trading institutions have generally failed to deliver.

3.0 Pesticides

Insect and other pest control technology is another leading practice that is fairly easily adopted by farmers, mainly because the disappearance of insects and other pests after treatment is spectacular and the good results are immediately evident. Domestic consumption of plant protection chemicals has so far been restricted by reasons similar to those outlined before in the discussion of fertilizers. A small number of maize and sorghum farmers use chemical insecticides (particularly against the stalk-borer), and only a handful of farmers were found using herbicides for weed control.

The major pests of maize is the stalk-borer, Chilo partellus. Basudin (and Durisban, to a smaller extent) is main chemical insecticide used to control against the stalk-borer.

Even though the stalk-borer infestation alone in maize may account between 30 to 50 percent yield reduction, the FSP has found out that only 34.5 percent of maize farmers in 10 more advanced villages in the Lower and Middle Shabelle regions have used Basudin during Gu season 1987 to control the stalk-borer. Similar studies carried out by AFMET in 1984/85 in the Lower Shabelle and 1985/86 in the Middle Shabelle regions shows significant difference between the two regions (68 and 12 percent respectively) in the use of insecticide. Insecticide use against

the stalk-bore among the broad farmer population is certainly less than that reported above for the farmers in more accessible villages which had some contact with the extension service.

3.1 Pesticides Supply and Distribution

With the exception of the banana industry which imports its own plant protection chemicals, the small number of food crop producers which use insecticides rely completely on the Ministry of Agriculture and its specialized agencies (e.g. ONAT, ADC, AFMET) for their pest eradication. Due to the lack of alternative sources of chemical pesticides other than the Ministry of Agriculture and its free distribution of pesticides for so long, farmers have come to assume that the it is the Ministry's job to eradicate the pests in their own individual farms (COWIconsult, 1984).

As in the case of fertilizer trade, there remains a great deal of confusion and overlapping in government input marketing and distribution policies concerning the roles of various public agencies. For example, pesticide importatic.. and distribution was once the mandate of ADC but was later transferred to ONAT, then back to ADC, and then to AFMET. Presently, the ADC still continues to have its input department and distributes some donations of pesticides.

Private pesticide trade is virtually non-existent. The

multinational chemical and pharmaceutical company CIBA-GEIGY had opened a small advertising office in Mogadishu in the mid-1970's. Currently, an associated company to the above, DUCO Ltd., has began selling some reformulated veterinary drugs to the livestock producers.

3.2 Economic Evaluation of Chemical Control on Maize

Stalk-borer damage to maize may be as high as 50 percent yield reduction. There several scanty research trials on stalk-borer chemical control carried out by the Central Agricultural Research Station (CARS) in Afgoi. The infestation of the plant caused by the larvae of the insect begins as early as five days after emergence of the crop. Lazarevic after four years of different insecticide trials reported that chemical control of the insect proved effective and that yield of treated plots was generally significantly higher than the untreated control plots (Lazarevic, 1976). In a similar stalk-borer chemical control trials, Abdulcadir Farah Nur (1978) reported that Furadan, Carbaryl, and Diazinon (also know by the trade name of Basudin) applications in Der season 1976 and Gu season 1977 gave in most cases more than double the yield.

Most recent trials carried out by AwAden & Fahiye for their B.SC. degree research paper reported (1984) an incremental maize yield 1200 Kg/Ha. by the one time application of 20 Kg ai/Ha. of Basudin 10G during the season. Taking a conservative estimate of

1000 Kg/Ha. of maize by the application of 20 Kg/Ha. and product and input farmgate prices of So.Sh. 14 and 200 respectively, the ratio of the net incremental value to cost is approximately 3.5 : 1.

3.3 Constraints

Similar to the reasons given by farmers for fertilizer, unavailability of pesticide (especially insecticides) is a major constraint that severely limits the adoption of chemical pesticide control technologies. This lack of availability does not seem to have improved at all even after more than US$ 100 million has been exhausted by various types of imports in the ASAP, AIP, and CIP programmes in which the major objective behind their initiation was to make agricultural inputs available to farmers.

4.0 Improved Seeds

There is no institutional organization for the marketing and distribution of improved seeds in the country. Improved seed use, therefore, by farmers is severely limited. More than 77 percent of the FSP sample farmers reported of their awareness of the benefits of Somtux improved maize variety, but only 31 percent of them use Somtux. The limiting factor for the adoption and use of higher yielding variety is mainly again the lack of availability

of the Somtux to farmers except for the few selected farmers who receive credit from FAO/UNCDF project.

4.1 Improved Seeds Supply and Distribution

The provision of good seeds has two objectives: to ensure that the farmer will sow the variety of the crop that is most suitable for his condition and ecosystem, and to guarantee that he will get a full and uniform stand of plants. The individual farmer is usually not well equipped to maintain the purity and genetic identity of the varieties which he grows. With hybrid varieties whose importance in a number of a widely grown crops is increasing, it is of course out of the question for the individual farmer to produce his own seeds. In addition to the need for maintaining the genetic identity of improved varieties, a certified seed will ensure that the farmer obtains sound seed, with high percentage of germination and emergence, and free from seed diseases.

With the above objectives in mind, an FAO seed production and certification project was began in the country in 1971. Seed was originally planned to be produced in three state farms located in three different regions. These ambitious plans were later modified, and seed production was later decided to take place in one 200 Ha. farm in Afgoi. Included in the seeds to be produced by the seed production and certification project were maize, sorghum, millet, sesame, rice, and groundnut. The seed production

project was designed with the assumption that the Agricultural Research Institute would be able to provide the necessary foundation seeds of the various crops. This assumption later proved to be wrong as evidenced by the fact that ARI was never able to deliver foundation seed for any of the planned six crops with the exception of Somtux maize seed variety in 1979. Since then, the Afgoi seed farm operations were based on the production of 1979 supplied Somtux maize seeds and local sesame seed. The ARI has not since then renewed the Somtux variety foundation seed, and the improved variety has undoubtedly degenerated genetically. The present production is between 50-60 tons of maize seed and 3.5 tons of sesame seed (see table).

Table 3

Afgoi Seed Farm Output 1984-86
(in Quintals)

	Maize Seed		Sesame Seed	
Year	Gu	Der	Gu	Der
1984	3013.7	41	10	7
1985	706.6	132	15.4	16
1986	600	103	3	7

Source: Afgoi Seed Farm

4.2 Economic Evaluation of Somtux Maize Variety

Somtux improved maize variety is the only improved seed available in the country. There is very scanty information regarding the yield performance of the variety compared to the local variety at its original generation and dissemination. However, in very recent farmers' field trials in 6 locations in the Middle Shabelle during Gu 1987, the Somtux variety out yielded the local maize variety by producing 1829 versus 1547 Kg./Ha. of the local maize variety. That is an incremental yield of 282 Kg. with the application of recommended practices. Wether the above is the true yield potential of the Somtux or whether the improved variety has degenerated need further analysis.

4.3 Constraints

Although government programs in research, extension and farmer training, and credit have recognized for a long time the need to establish and carry out the necessary activities to establish a certified seed delivery system, the various attempts have so failed. The agricultural research institute to this date lacks a systematic program of agronomic and breeding experiments of major domestic crops to produce high yielding and pest resistent improved varieties and their accompanying agronomic recommendation as regards to the appropriate date of planting, weeding, spacing, fertilizer application, irrigation, and other

recommendations.

Constraints of the seed multiplication center are luck of foundation seeds. There is only Somtux maize variety for multiplication now, and none for other major crops.

5.0 Farm Credit

Formal credit supply to small farmers is severely limited. The riskiness of providing credit to a large number of small farmers with very little solid collateral available to them has restricted formal credit provision in the country. In recognition of the need of formal credit scheme for small farmers to enable them to adopt improved technologies, a UNCDF pilot small farmer credit programme was established in 1984. This credit was exclusively designed and targeted to farmers cultivating up to five Ha. (which was later on revised to 12 Ha.). The programme provides credit in kind (i.e. in the form of improved seeds, fertilizer, insecticide, and tractor services) and has so far been able to provide credit to less than 2000 farmers in the Middle and Lower Shabelle regions.

5.1 Credit Supply and Distribution

Formal agricultural credit is provided by the Somali Development Bank (SDB) and the Somali Commercial & Savings Bank (SCSB). The

SDB extends medium and long-term loans for agriculture while the SCSB provides short term loans of up to one year duration. The UNCDF pilot seasonal credit programme operates jointly with the SCSB. Informal credit is widely prevalent in the farming communities.

5.2 Constraints

The lack of effective small farmers organizations is the main constraint to providing credit to small farmers. Farmer cooperatives could be an effective mechanism for providing credit in bulk to organized groups of farmers. The small proportion of farmers who are cooperative members restricts the usefulness cooperatives might have had in channeling credit to the small farmers.

6.0 Farm Mechanization

The tractor is frequently considered to be the symbol of agricultural development, and yet agricultural progress does not necessarily depend on immediate mechanization. Tractor purchase requires an initial relatively large capital investments, and the main justification for it's use is to save labor. Somalia, however, is a relatively capital scarce and abundant labor country. For this reason, one would expect that the technological orientation of the country to be capital-saving and labor-using

technologies. However, this is not true in Somalia in terms of the popularity of tractor use among farmers. The FSP has found out that over 93 percent of the farmers in the Middle and Lower Shabelle regions of Somalia use tractors at least for seed-bed preparation. It was also found out that only 5 percent of the farmers own tractors. Therefore, the majority of farmers depend on rented tractors for ploughing their fields.

6.1 Supply and Distribution of Farm Machinery

Farmers rent tractors from ONAT (the farm machinery and agricultural services state agency) and from other farmers.
The market potential for mechanization is considerable due to the fact of the widespread tractor use and small number of farmers who own tractors. ONAT currently offers tractor hire services only. However, WAGAD (parastatal which has the mandate for the importation of vehicles, tractors, and other machinery) has the responsibility for the importation of tractors. In addition to the state agency WAGAD, there are a few private tractor import companies.

6.2 Constraints

Constraints of mechanization include the foreign exchange requirements for the importation of the tractors and spare parts, and others similar to those listed above for the other inputs.

7.0 Conclusion & Recommendations

Are there problems in input supply and distribution in Somalia? The answer to the above question is categorically a big yes. What are the main problems in the input supply and distribution?

1. Lack of concerted, consistent, and systematic agricultural research effort geared for soiving practical problems faced by farmers.

2. An emerging good extension program but which lacks the improved packages to extend to farmers. The extension has already exhausted the few recommendations that did not need to await a long experimental time before being delivered to farmers.

3. A seed multiplication scheme without no foundation seeds to multiply.

4. Severely limited involvement of private sector in the supply and distribution of farm inputs and poor performance by the public agencies to deliver farm inputs to farmers adequately and on a timely basis.

5. Huge amounts of foreign exchange already spent on unproductive imports instead of agricultural inputs.

6. Chaotic sequencing of agricultural investment programs; seed multiplication project before the required research output, extension without research, etc.

It is recommended that authorities evaluate very critically at past performance of the agricultural delivery system, and make fresh start towards ensuring future courses of action. It is a terrible thing for an individual as well as for a nation not to learn from past mistakes.