

THE SUPPLY OF COTTON IN ZAIRE: A FEASIBILITY STUDY

BY

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IN MEMORY OF MY BELOVED FATHER,

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ABSTRACT

In Zaire, the agricultural sector employs 75 percent of the total population and holds a strategic position in the promotion of economic development for the country. However, the predominance of subsistence production is so pronounced until even now the contribution of agriculture to the gross national product remains low. The cotton industry is one of the largest in the agricultural sector and the ultimate goal of the Department of Agriculture has been to find ways and means of achieving self-sufficiency in cotton production and eventually to export the surplus. This study is intended to facilitate the formulation of new policies and strategies in cotton production. It shows to what extent cotton production can be made more economically viable.

Basic to this study are the concepts of economic efficiency, the supply function, price elasticity of supply and opportunity cost. All of these concepts are used to show the effect on cotton production and on farmer's income. Data on cotton production and prices were compiled from both primary and secondary sources.

The main finding of the study is that an increase in price alone would not necessarily assure an increase in production. Increases in cotton prices have been more than offset by increases in prices paid by the farmer, i.e., inflation. However, there is a risk also of making Zairian cotton more expensive by increasing its price and therefore making it less competitive in the market. This would mean that cotton pricing policies should be viewed within a more global framework, with the major aim being to make cotton cultivation as profitable at the farm level as other competing crops. An evaluation of the constraints to cotton production at the farm level has shown that heavy labor requirements combined with the cost

of production and the pressures of inflation has resulted in a reduction of farm income. Finally, no great increase in cotton production should be expected until the price is more competitive and the cost of production is lowered enough to make cotton production profitable to the farmer.

CHAPTER I

INTRODUCTION

STATEMENT OF THE PROBLEM

The Role of Agriculture in Zaire

The customary approach to the role of agriculture in economic development is formulated in terms of the contributions the agricultural sector can make or the functions it can perform during the process of economic development. It is generally accepted that agricultural development can promote the economic development of less developed countries in five distinct ways:

1. By increasing the supply of food available for domestic consumption.
2. By releasing the labor needed for industrial employment.
3. By enlarging the size of the domestic market for the manufacturing sector.
4. By increasing the supply of domestic savings.
5. By providing the foreign exchange earned through agricultural exports.

In Zaire particularly, the agricultural sector keeps a strategic position in the promotion of economic development. Widely varying types of climate, soil and topography are combined to produce a diverse pattern of land utilization and cropping. The agricultural sector alone utilizes

more than 75 percent of the population. Traditional techniques of cultivation and low productivity exist together with some of the most developed agricultural technology in Africa. However, the predominance of subsistence production over the cash crop sector is so great that the contribution of agriculture to the gross national product has been low. Up to the early 1960's, the country was self-sufficient in basic foodstuffs and other agricultural products. Since then, the trend has been reversed and domestic production has actually been heavily supplemented with imports, making it difficult for the government to deal with the problem of balance of payment. Therefore, there is a need to decrease food imports by putting more emphasis on domestic production which will stimulate the whole economy.

The textile industry in Zaire expanded in the past to the extent that its capacity is presently more than the domestic supply of cotton. The textile mills are presently operating below capacity and due to the competition from imports of second-hand clothing, they cannot actually sell all they produce. In addition, cotton production is becoming economically less profitable as compared to food crops, because of its high cost of production and prevailing low producer price. The latter is due largely to government price policy for cotton. The problem is definitely important and represents a serious threat to the survival of the whole cotton industry.

Brief Historical Background of the Agricultural Sector

Zaire gained independence from Belgium in June 1960. Because of its mineral wealth, Zaire has been the subject of intense interest among the major world powers for a long time. Political instability of the post independence period, nationalization policy (which took place in 1973)

and the collapse of the marketing structure resulted in stagnating agricultural production.

The country was normally self-sufficient in foodstuffs before 1960, and exported an impressive volume of agricultural products. Between 1960 and 1966, total production fell drastically because of insecurity in the producing areas and the breakdown of the distribution system which made the farmer's income fall. Presently, cotton production in Zaire is far less than the 1960 level. Production has declined because of the reduction in the number of cotton farmers, reduction in the acreage per farm, as well as in yield per acre. The restricted cash income has meant that the demand for inputs (fertilizers) has been insufficient to stimulate the establishment of efficient systems of distribution for such inputs.

In addition, poor road networks have raised transport costs to the extent that product/input price ratios are unfavorable. Cotton farmers can no longer afford to purchase necessary inputs and the interrelatedness of this whole set of constraints obviously increases the difficulty of achieving a profitable industry.

Importance of the Study

As will be shown later in this study, the cotton industry is one of the largest in the agricultural sector in Zaire. The ultimate goal of the Department of Agriculture has been to find ways and means to achieve self-sufficiency in cotton production and eventually to export the surplus. This will help to lower the costs of production of the local textile industries, beef-up the revenue of the agricultural sector and stimulate the farmer to produce more.

The present study is therefore intended to facilitate the formulation

of new policies and strategies on cotton production. It will help to show to what extent cotton production could be economically feasible. This study is of use to those involved in research on cotton; for students and for anyone at the policymaking level within the agricultural sector.

OBJECTIVES OF THE STUDY

Since 1960, the cotton production trend has been downward sloping because of certain constraints. The objectives of this study could then be stated as follows:

- to identify the constraints to cotton production and to expansion of the textile industry;
- to identify the weakness of present policies on cotton production and to formulate alternative strategies for increasing domestic cotton supply;
- to establish the conditions under which cotton production could become economically attractive.

APPLICATIONS OF THEORY

Economic Efficiency

Basic to virtually any economic study is the concept of economic efficiency. Stigler defines the term in application to the major economic function, the allocation of resources:

"...the resources at the disposal of the society should be allocated among products and production units in such a way, given the state of technological information, as to obtain as much as possible of the desired outputs. It is important to emphasize that the allocation of resource: is not funds--

mentally a technological question: at any given time there exist many different ways of making every product. Engineers generally may prefer one way on grounds of novelty, esthetics, or parentage, but technological information is insufficient to make an efficient choice. Efficiency itself is no economic concept. It is usually defined as useful output divided by useful input, and it is the function of the values of the economic system to measure usefulness." (p. 3)

Location Theory for Agriculture

Whittaker discusses Thunen's theory of location of agricultural production, which seems especially appropriate to the cotton industry of Zaire:

"Another feature of Thunen's book was his treatment of the location of agricultural production in the neighborhood of a city. He considered a large town, drawing from a surrounding plain the agricultural produce which it needed. Commodities requiring to be consumed in fresh condition, and those costly to transport, would be produced nearest the town (fresh vegetables being an example). In broad rings, other goods were produced, at greater and greater distances from the town as their nature and value made them more and more able to bear the time and cost involved in transportation. The price of a particular commodity at the consuming center would be the same for all suppliers, but its value at the point of production would gradually lessen as the distance from the town increased. The good would cease to be produced wherever another good would yield a greater return, allowing for transportation cost. Where no product would meet the cost of its preparation and transportation, the land would cease to be used." (pp. 264-265)

The last statement refers, of course, to production for sale. In Zaire, such an area would continue in production for subsistence purposes.

The Supply Function

In economics, supply always means the series of prices and corresponding quantities that will be offered at those prices. Specifically, Buse and Bromley (1965) define the term "supply" as the quantities of a specific commodity which a seller (or sellers) would be willing and able to place on the market in a specified time period at alternative prices,

ceteris paribus, (i.e. all other things being held constant). The other things refer to other variables such as prices of all inputs, prices of the products of competing enterprises, and technology. Should one of these items change, the net result is a new supply schedule for the firm; that is, the ability and willingness to supply a given quantity at a particular price will be different from what it was before.

It should be noticed that the total industry supply is obtained by summing up the schedules of all the individual firms in the industry. In other words, the supply curve of the industry is the sum of the marginal cost curves above the average variable costs of all potential and actual firms in the industry.

It should also be noticed that as the price of output rises, the output of the industry is expected to increase for two reasons:

1. The outputs of each firm already in production increases as it expands output along its upward-sloping marginal cost curve.
2. Other firms will enter the industry and begin to produce.

To study the supply response, we will be concerned with understanding and explaining how the quantity of cotton placed on the market by individual farmers is related to the changes in its price. Additional variables such as changes in input prices, the time period, and the number of farmers are also of great importance in studying the supply response of agricultural products. For a better understanding and to facilitate the analysis of supply response, the following concepts are used:

1. Price elasticity of supply.
2. Changes in supply.
3. Changes in quantity of cotton supplied.

Price Elasticity of Supply

The supply theory indicated that as the price of the product goes up, the quantity supplied is expected to go up (other things being equal). This is, in fact, the theoretical explanation of the positively sloped supply curve.

The concept of supply elasticity is a measure of responsiveness of quantities offered to a change in price; i.e., a comparison of the percentage change in the quantity supplied of a commodity to a percentage change in its price. It is then generally defined as:

$$E = \frac{dq}{q} / \frac{dp}{p} = \% \text{ change in } q / \% \text{ change in } p$$

Where q = quantity supplied

p = price per unit

dq = change in q

dp = change in p

This study utilizes time series analysis, therefore it appeared convenient that the price elasticity of supply be computed at the means of the data.

The elasticity being a dimensionless number, an elastic response would simply mean that the change in quantity of cotton supplied in response to 1 percent change in price per unit is greater than 1 percent ($E_s > 1$). An inelastic response would occur when the change in the amount of cotton supplied relative to a 1 percent price change is less than 1 percent ($E_s < 1$). Finally, a response of unitary elasticity would mean that the percentage change in quantity supplied is exactly equal to the percentage change in price ($E_s = 1$).

A Change in Supply of Cotton

A change in the quantity supplied may be simply a movement along a given supply curve. It is of use to see the change in quantity of cotton supplied as a response to the change in price of cotton, all other variables being held constant.

A change in supply means that more or less of the commodity will be offered on the market at the same price. A change in supply of cotton could be explained by a change in one of the following factors: production costs, profitability of competitive enterprises, technology, the number of cotton farmers or weather conditions.

Opportunity Cost

The opportunity cost principle refers to the net income foregone by choosing a particular enterprise. The income foregone refers to income from the most profitable alternative enterprise, and, if the income from the most profitable alternative enterprise is more than was received from the enterprise chosen, the entrepreneur has in reality suffered a loss. This simple principle may indicate the most important reason for the reluctance of Zairian farmers to plant cotton when, in their best judgment, there are more profitable alternative crops available to them (Heady and Jensen, 1954, p. 184). The level of production of a given crop is going to be low if there are more attractive alternative crops open to the farmer.

METHODOLOGY

The first step was to collect data related to cotton production and prices for, at least, the last ten years. Some unpublished sources such

as World Bank reports, government reports, thesis drafts and university work papers were assembled. However, because of wide discrepancies between data and the limited amount of reliable sources, it appeared necessary to search for information from cotton farmers as well as managers of different ginning plants. The author conducted a survey on cotton production, marketing conditions and ginning in the northern and the southwestern parts of the country where 70 farmers were interviewed in each region. Three managers were interviewed. Data concerning transportation costs and price for ginned cotton were collected from three ginning mills; Filtisaf, Sotexki and Utexco. A questionnaire was set up to ease the work; this helped to direct the conversation within the interested areas. Data were then used to compute means, percentages, and to compare the profitability of producing cotton vs competitive enterprises. The results helped to draw conclusions on the feasibility for producing cotton and the future of the cotton industry in Zaire.

SCOPE AND LIMITATIONS

The initial objectives of this paper were to assess cotton production in Zaire and to estimate the supply for the next few years. These objectives had to be modified as our research went on mostly because of a lack of useful data on prices or other textile crops initially considered as competitive enterprises. The lack of accurate and complete time series data on those items resulted in illogical regression coefficients and effectively eliminated the possibility of quantitative estimates of supply elasticity.

Rather than using other textile crops as competitive and substitute

for cotton, we intend to study the feasibility of cotton production with comparison to other crops within the farmers' combination (or rotation) and to establish the conditions under which cotton production could become economically attractive.

REVIEW OF RELATED LITERATURE

The "Area Handbook for the Democratic Republic of Congo"¹ is one of a series of handbooks prepared as Foreign Area Studies by the American University and designed to provide a broad picture of all aspects of the economy. The book revealed that cotton production in Zaire declined sharply soon after independence in 1960. Apparently, in connection with the end of compulsory cultivation, a marked shift to cash crops occurred on land suited for cotton. The increase in cotton production that occurred in the preindependence years was primarily the result of an expansion in the acreage under cultivation, rather than of greater productivity. During that period, farmers were under compulsion by the government to produce cotton. They still are to some extent, but the compulsion is much less rigorously enforced.

The lack of significant improvements in the traditional methods of cultivation together with the departure of Belgian Technicians in 1960 brought the whole framework supporting cotton cultivation to a desperate disintegration.

In the late 1960's, resumption of cotton cultivation primarily through the reopening of the seed multiplication centers and the improvement of

¹The Democratic Republic of Congo became Republic of Zaire in 1972. The Area Handbook was published in 1971.

the road system occupied a central role in the government's agricultural recovery program. Cotton production expanded slightly in 1966 and 1967 as, according to the authors, improved security conditions permitted the cotton companies to re-enter the cotton growing areas. Those companies resumed their activities by providing farmers with improved seeds, hand-tools, insecticides and a more or less assured market.

E. Tollens' (1976) study on cotton production and marketing in Northern Zaire revealed that cotton yields were relatively low in the area under consideration, and so was gross income per farm from cotton production. He explained the low revenue by a prevailing low producer price which was well below the price the domestic spinners would have to pay for imports of the same quality and grade.

The study indicated that the use of improved inputs (fertilizers, pesticides and good seeds on cotton production, as well as the level of mechanization) were very low. The author recommended a revision of cotton pricing policy, diffusion of improved agronomic practices, an overhaul of the cotton extension service, a pilot cotton development project in Bas-Uelè and accelerated research on new varieties.

Brixhe (1958) emphasized the importance of cotton in the Zairian agriculture and gave an estimated figure of 600,000 square kilometers of land devoted to cotton cropping. He pictured the existence of two major cotton regions as a distinct advantage in that it facilitates cotton cultivation throughout the year. Therefore, the local textile industry should encounter less problems of supply in cotton fiber which should always be under cultivation in either one or the other of the two regions north and south of the Equator.

According to Brixhe, the cotton industry has a promising future in Zaire, not to mention its direct influence upon the expansion of income earning opportunities within the agricultural sector itself.

B. F. Johnston and P. Kilby (1975), argued that the most promising means of increasing farm productivity and output in a particular country will depend on:

- a. its resource endowment and land/man ratio,
- b. the technologies available and in prospect,
- c. its infrastructure,
- d. factors influencing the readiness and ability of farmers to adopt innovations, and
- e. the existing institutions and administrative capabilities.

V. Ruttan and Y. Hayani (1969) have hypothesized that relative factor prices will induce not only farmers and firms supplying inputs but also agricultural administrators and scientists to emphasize on a country's scarce factors of production. Their analysis is especially valuable in calling attention to the fact that prices which accurately reflect social opportunity costs are perhaps even more important in influencing the orientation of research and therefore the nature of technical change, which conditions a country's agricultural growth path than in relation to short-run allocative efficiency. The mechanism of agricultural growth is therefore a dynamic process of factor substitution in response to trends in relative prices.

The decrease in cotton production in Zaire could partially, if not totally, be related to its profitability as compared to alternative enterprises, especially food crops. Given the limited resources, farmers have

no other choice than putting the additional or the existing units of labor, capital and land to the enterprise that will bring the greatest return. Heady and Jensen explain this fact with the principle of opportunity costs, which states that "profit will be greatest if each unit of labor, capital and land is used where it will add the most to return." The principal is called "opportunity cost" because it considers the value of one enterprise sacrificed as a cost in producing another enterprise. They called attention to the fact that the best combination of enterprises is attained not when we select profitable crops, but when we select the most profitable enterprises. The combination which is most profitable will depend on the price we receive for the different products, the direct costs attached to each enterprise and the amount of production we sacrifice as we replace one enterprise partly or entirely with another one.

CHAPTER II

THE COTTON INDUSTRY

INTRODUCTION OF COTTON IN ZAIRE

According to the available literature (Banneux in 1938 and Brixhe in 1953), cotton was undoubtedly introduced in Zaire (former Congo) by slave traders from Egypt and Sudan and by Portuguese traders from Angola back in the 1860's. The crop (*Gossypium Hirsutum*) grew wild in most of the savanna region north of the rain forest and the savanna region in the south-central part of the country. From 1915 to 1920, Edward Fisher an American cotton specialist, introduced the American variety; Triumph Big Boll, in Sankuru and in Maniema and obtained satisfactory yields in regions with moderate altitude and pronounced dry season. The government decided to extend cotton production to other regions. In 1918, cotton cultivation became compulsory in all regions except Kinshasa (formerly Leopoldville). The same year, the colonial government ordered two ginning mills from the United States, and on February 10, 1920, the first important private cotton company, COTONCO, was set up to develop the cotton industry in Zaire.

Growth of Cotton in Zaire

From an experimental level in 1918, cotton production grew so rapidly that the total area cultivated in 1953 reached one-third million hectares. By 1953, 5,000 cotton extension offices were set up all over the country

together with 102 ginning mills for an estimated total of 700,000 cotton farmers. Table 1 shows the growth of cotton production in Zaire from 1915 to 1974.

From the table, seed cotton production went up from one single ton in 1919 to more than 30,000 tons in 1930. The production quadrupled over the next decade and reached 132,104 tons in 1940. Between 1941 and 1949, cotton production fell because of World War II. During the war, some of the cotton extension services were closed down and cotton farmers were directed to tap natural rubber in forests and to work in "crash" rubber plantations. Production recovered slowly after the war, reached a peak of 179,660 tons in 1959, then fell drastically after independence. It has not reached 100,000 tons since 1960 (Table 1).

Zairian climate is, in general, suitable for cotton production; the temperature never goes below 5° C (except on the mountains) nor above 40° C. However, the distribution of rainfall encourages production; only in the areas which, in the five months preceding the dry season, have the amount of water which is needed for the vegetative development of the cotton plant. Cotton production seasons alternate between these regions, since they are located on each side of the Equator.

A Belgian researcher, Van de Walle (1960), distinguished three cotton regions in Zaire according to a productivity criterion and the possibilities for crop intensification: a high yielding Region A with an average yield exceeding 375 kg per hectare, a marginal Region B with 300 kg per hectare and an uneconomical Region C with less than 300 kg per hectare. The number of cotton farmers in the three regions was estimated at 875,520 in 1959. After independence, the number of cotton farmers in

Table 1
SEED COTTON PRODUCTION, REPUBLIC OF ZAIRE, 1915-1980

Year	Seed Cotton Production	Year	Seed Cotton Production
	-metric tons-		-metric tons-
1915	1	1941	138024
1916	13	1942	117836
1917	106	1943	128796
1918	320	1944	90559
1919	450	1945	111253
1920	1527	1946	117852
1921	1770	1947	116353
1922	3105	1948	123905
1923	2610	1949	143081
1924	5130	1950	138389
1925	9167	1951	133402
1926	14928	1952	158347
1927	17639	1953	136411
1928	20207	1954	143348
1929	21754	1955	145726
1930	30600	1956	154481
1931	44799	1957	129829
1932	26775	1958	142507
1933	46400	1959	179660
1934	59160	1960	140077
1935	77781	1961	64630
1936	92105	1962	38873
1937	106496	1963	42820
1938	122463	1964	40210
1939	112228	1965	18700
1940	132104	1966	19960

Table 1 (Cont.)

Year	Seed Cotton Production	Year	Seed Cotton Production
	-metric tons-		-metric tons-
1967	24910	1974	48500
1968	45210	1975	26500
1969	47400	1976	25800
1970	53800	1977	33000
1971	59500	1978	16700
1972	52980	1979	18700
1973	66915	1980	29100

SOURCE: A Brixhe: Le Coton au Congo Belge, 1958 and IRES, 1968 to 1980.

three regions dropped and is presently estimated by CSCO at 350,000 farmers.

The principal cotton-producing areas are specifically the following:

1. North-Western area; Equator Region, Sub-region of Ubangi and Mongala.
2. North-Eastern area; Haut-Zaire Region, Sub-regions of Bas-Uele', and Ituri. These sub-regions include the following urban centers: Buta, Titule, Bambesa, Dingila, Poko, Rungu, Isiro, Wamba and Aketi.
3. Central area for the regions of Shaba, Estern Kasai and Western Kasai, sub-region: Candajika.
4. Eastern area for Kivu Region, zone of Uvira, Fizi and Walungu.

Implantation of Cotton Industry in Zaire

Soon after the introduction of the American variety "Triumph Big Boll" by Edward Fisher in 1915, the colonial government decided to order two ginneries from the U.S.A., because of the promising yields obtained. The two ginning mills were installed in Kibombo (Maniema) and Lusambo (Sankuru). At the same time, the Deputy Ministry of Colonies, L. Frank, felt the necessity of associating private business to help develop the newborn cotton industry. The first private cotton company, the "Compagnie Cotonnière Congolaise" (COTONCO) was founded in Zaire on February 10, 1920. From 1920 to 1930, several private cotton companies were created in Zaire and by the end of 1937, there were 119 ginneries installed in the country.

In 1929, the "Comité Cotonnier Congolais" or Congolese Cotton Committee was created, bringing together representatives from all the cotton companies and standardized work methods. It had a strong voice in the

design and implementation of cotton policies until the creation of ONAFITEX in 1971.

After the creation of the Congolese Cotton Committee in 1929, a number of institutions were successively founded to support and develop the cotton industry. Thus, in 1924, the "Fonds de Remploi" or Reinvestment Fund was born under authorization of the governor general of Zaire (then Congo). The funds were collected from cotton taxes and were used for agricultural development of the cotton regions.

In 1936, the Reinvestment Fund was replaced by "Fonds de Réserve Congolaise" or Cotton Reserve Fund. This one was established by the colonial government to stabilize seed cotton prices, to improve road maintenance and to provide the farmers with the difference between the "potential" cotton price and the actual price which farmers received. The seed cotton price paid to farmers was determined by deducting the following from the potential price: cost of small farm tools and road improvement, contributions to local village chests, new taxes which increased the cost price of cotton ginneries, and deposits in the stabilization fund.

In 1943, the Cotton Reserve Fund was brought under the management of a committee entitled the "Comité de Gérance de la Caisse de Réserve Congolaise" (COGERCO). The functions of COGERCO were as follows:

1. Financing, through private cotton companies, the purchase of seed cotton from farmers at a fixed, guaranteed price.
2. Financing ginning and transport costs.
3. Supervision of sales of cotton fiber.
4. Development of cotton production through the supply of improved seeds, insecticides, farm equipment, etc.

In 1950, the reserves of COGERCO amounted to 25 million dollars, and over the 1951-1953 period, a total of 12.84 million dollars was returned to farmers as cash bonuses distributed according to their production. The Decree-Law (Décret Loi) of August 13, 1965 focused on Zairianization of COGERCO management and it called for increasing participation of cotton farmers in the management of COGERCO. This decree reduced the influence of the private firms in designing cotton policies. COTONCO (Compagnie Cotonnière Congolaise), a Belgian private company, controlled eight cotton companies in Zaire and three vegetable oil (including cotton seed oil) companies. These companies controlled about 90 percent of cotton marketing in Zaire and operated 74 cotton ginneries with an estimated ginning capacity of 355,300 tons of seed cotton. COTONCO and seven other private companies in Zaire operated a total of 115 ginneries. Presently however, only about 60 ginning plants are in operation with a total annual capacity of about 300,000 tons. Since independence, the cotton companies have made few new investments. These cotton companies existed until the creation of ONAFITEX in 1971.

THE ONAFITEX

The government decided on the creation of ONAFITEX, August 12, 1971 after COGERCO's failure to cope with the rising ginning costs of the cotton companies. The newborn office replaced COGERCO and COVENCO and combined all the different bodies concerned with cotton production, processing and marketing under a single organization.

ONAFITEX was created as a public institution under the authority of the Ministry of Agriculture with monopoly rights for the marketing of

Table 2

REPUBLIC OF ZAIRE COTTON COMPANIES, NUMBER OF GINNING PLANTS
AND THEIR LOCATION IN 1957

Cotton Companies	Sub-Region	Number of ginning plants
<u>Northern Cotton Region</u>		
Belgika	Uélé	8
Société Contonnière de Bomokandi	Uélé	5
N.A.H.V.	Uélé - Ubangi	6
Vinchent	Ituri	1
COTONCO	Bas-Uélé	11
	Haut-Uélé	6
	Ubangi	<u>11</u>
	Sub-total	48
<u>Southern Cotton Region</u>		
Société Cotonnière Coloniale	Lomami-Sankuru	3
Compagnie Commerciale Belgo-Africaine	Lomami-Sankuru	3
Société Contonnière de Tanganika	Tanganika	7
Compagnie de la Ruzizi	Sud-Kivu	3
Société Cotonnière de la Luisa	Kasai	1
Compagnie du Lubilashi	Katanga	1
Société Congolaise Bunge	Haut Lomama	5
	Haut Katanga	
LACOMINKA	Kasai	1
COTONCO	Lomai-Kasai	<u>52</u>
	Sankuru, Kivu, Maniema, Kilolo	
	Sub-total	52
	Total	<u>100</u>

SOURCE: A. Brixhe, Le au Congo Belge, P. 17.

cotton and its by-products and any other textile fiber. By setting up such an institution, the government wanted to cut down on the profit margin of the private cotton companies and eventually to eliminate them if an agreement could not be reached.

ONAFITEX² was then charged with the responsibility of cotton marketing which included the collection of seed cotton at local assembly points and transport to the ginning plants. The cotton companies remained responsible for ginning, baling and transport of bales from ginneries to the pick-up points. ONAFITEX finally arranged for the sale of cotton fiber to local textile firms, or for export. The system worked alright until the time the cotton companies could no longer afford to perform their tasks at the proposed work fee.³ The government then decided to take over their facilities, supplies and manpower,⁴ both Zairian and expatriate. Tollens states that the principal reasons which led the government to a take-over of the facilities of the private cotton companies could be summarized as follows:

1. exhaustion of COGERCO reserves and imminence of bankruptcy of the cotton industry,
2. government effort to put the economy under Zairian control,
3. stubbornness of the cotton companies in yielding to government pressure for changes,
4. inflation of ginning costs,
5. slow Africanization of ginning management,

²ONAFITEX is an abbreviation meaning: Office National des Fibres Textiles or National Office for Textile Fibers.

³The government first proposed 37 Z per ton of cotton fiber ginned. After a while, the ginneries demanded a much higher fee for which the government disagreed.

⁴The nationalization took place in Zaire in 1973.

6. lack of new investments in ginning mills since 1960,
7. persistent losses of the cotton seed crushing industry,
8. difficulties experienced by the government and COGERCO in controlling ginning costs because of the lack of knowledge of real processing and transportation costs,
9. conflicting incentives and interests placing cotton farmers and the government in opposition to the cotton companies, and
10. private companies generally ignored cotton legislation.

ONAFITEX then grew up and became a powerful institution responsible for the growing, processing and marketing of cotton in Zaire. Specially, its tasks were to provide technical assistance to cotton farmers and to insure cotton marketing through collection, transport, ginning and the sale of cotton and its by-products. The new legislation also charged ONAFITEX with responsibility for:

1. creating a price stabilization fund for the purchase of seed cotton from farmers,
2. certifying and controlling quality standards of cotton fiber for export, and
3. organizing cotton farmers into cooperatives in order to gradually turn the responsibility for processing and commercialization over to them.

However, the establishment of ONAFITEX was not without difficulties; in fact, it created some new problems. Some of the problems encountered were the inability of the main office in Kinshasa to adequately supply funds and qualified personnel to the regional branches, poor transport facilities, etc. For these and other reasons, the buying of cotton from farmers was extended over the year instead of the usual three to five

months after harvest. This resulted in a reduction of quality of cotton fiber which stayed too long in poor storage conditions before being collected. At the sale time, cotton production fell from 68,000 tons in 1973 to 15,000 tons in 1978. An inefficient management of ONAFITEX led to its dissolution in 1978. A new government owned institution, C.S.Co,⁵ was created to take over the administrative and technical tasks previously performed by ONAFITEX. The government also decided to turn over the work on the fields to semi-private cotton companies which would simply be supervised by C.S.Co.

The three semi-private cotton companies operating actually on field are:

1. SOTEXCO: Société Textile Cotonnière du Haut-Zaire covering the Haut-Zaire region and most of the northern cotton belt.
2. LA COTONNIERE: Société Cotonnière et Agricole du Kasai et Maniema. The company works in the area from the southern part of the Kivu region to the western and eastern Kasai.
3. ESTAGRICO: Société Cotonnière et Agricole de l'Est du Zaire covering the north-eastern parts of the country from Uvira down to the Shaba region.

These companies are classified as semi-private because of the importance of government participation. On the other hand, some privately owned companies resumed their activities in the Shaba region: DASCO, TSHILOBO and MBAYO.

⁵C.S.Co: Caisse de Stabilisation Contonnière or Cotton Stabilization Fund.

In the Ubangi, (Equator region) there was also created a government owned company, COTON ZAIRE, which covers a large area immediately north of Equator. A more detailed description of these companies will be given later on in the study.

THE TEXTILE INDUSTRY IN ZAIRE⁶

Funded in 1925, the textile industry grew so rapidly that twenty years later, it was able to supply more than 30 percent of the local demand for fabrics. In fact, the first textile company, TEXSAF, was established in 1925 in Kinshasa and it delivered its first yards of fabrics in 1928. The mill was equipped with some 300 French made automatic weaving looms.

After the 1930 crisis, a second textile mill, UTEXCO, was set up in Kinshasa and was equipped with 15,000 spindles and 450 weaving looms. UTEXCO became prosperous in its activities because of the high demand for fabrics, and in 1960, the mill increased its equipment to 46,000 spindles and 1,500 weaving looms. The total output per year was 21,000,000 meters of colored and uncolored fabrics. Shortly after the second World War, three other companies each opened a textile mill--and so grew the industry.

Presently, the textile industry in Zaire is composed of ten enterprises located in different regions and cities:

- City of Kinshasa (The capital city): -UTEXCO
 -ZAIRE PRINT
 -C.P.A. ZAIRE
 -ZAITEX

⁶The textile industry in Zaire is basically dependent on cotton, synthetic fibers and other fiber crops of lesser importance.

-TISSAKIN

-NOVATEX

City of Lubumbashi (Region of Shaba): -SOLBENA

-AMATO FRERES

City of Kalemie (Shaba region): -FILTISAF

City of Kisangani (Haut-Zaire region):-SOTEXKI

Most of these textile companies dye and print a large part of their production and several have clothing manufacturing shops attached to the mill.

The whole textile industry in Zaire consumes about 21,000 tons of cotton fiber per year, which is more than the domestic production. Until recent developments, the level of output of textile mills was large enough that domestic production needed to be supplemented by imports. In fact, the industry has recently been facing difficulties that have forced most of the mills to cut down on their activities so that the importation of cotton fiber is no longer needed. These difficulties are mostly related to lack of foreign exchange necessary to purchase spare parts and imported raw materials, high cost of production, shrinking market outlet due to competition from second-hand clothing shops and a tight export policy.

According to some reliable sources (FILTISAF Bureau in Kinshasa), the importation of second-hand clothes amounts to some 30,000 metric tons or an equivalent of 31,000 tons of cotton fiber a year. One kilogram of cotton fiber can produce 6.6 meters of fabrics; the importation of second-hand clothes is then estimated at 204,600,000 meters. The individual consumption in Zaire being actually estimated at an average of six to eight meters of fabric a year, the national consumption could therefore be in

the neighborhood of 150,000,000 to 200,000,000 meters a year. It is clear that this represents a serious threat to the industry which utilizes, in turn, some 10,000 people. This figure will be much larger after adding those working in small clothing shops.

The wholesale price of second-hand clothing is about 1.00 U.S. dollars per kg, or an equivalent of 5.85 Zaires for some 6.6 meters of fabric at the legal rate of exchange. It should be noticed here that a few merchants actually buy or sell at the legal rate of exchange which, in Zaire, is currently about one-fifth the over-whelming market rate.⁷ In addition to this, smuggling activities on the state borders are intense and all of these practices have had severe consequences on the local textile industry. Regardless of the fabulous profits made by the merchants and smugglers who are taking advantage of a poorly controlled market, the price of second-hand clothing looks far more attractive than that of fabric produced locally.⁸

Another factor that explains the competition from second-hand clothes is the general economic decline which can be pictured by the following figures showing nominal and rural incomes over a period of six years (Table 3).

The matter has been made worse for the local textile industry, for they cannot buy large quantities of cotton fiber on the International

⁷From unofficial sources, the market rate of exchange is presently about 1 U.S. dollar for 29.0 Zaires.

⁸At the lower levels of income, people would not care much about the quality of the cloth, the ultimate goal being to get something to wear. In addition, it can be proven that some people prefer second-hand clothes because of their softness.

Table 3

NOMINAL AND REAL MONTHLY SALARIES OF BOTH THE PRIVATE AND
PUBLIC SECTORS, ZAIRE, 1975-1980

Year	Private Sector		Public Sector	
	Nominal	Real	Nominal	Real
1975	100.0	100.0	100.0	100.0
1976	131.4	76.9	127.9	74.8
1977	159.5	57.2	133.4	47.8
1978	206.5	49.3	155.7	37.2
1979	277.3	30.1	320.3	34.8
1980	378.3	28.0	371.5	27.5

SOURCE: Banque du Zaire, Rapport Annuel, 1980, page 104.

Market using the official rate of exchange. First, there is a rather constant lack of foreign exchange at the Central Bank for International transactions; second, such business would be highly unprofitable for the Bank because of the large discrepancy between the official and the market rate.

For all these reasons, the demand for cotton was expected to fall in 1983. If there was no change in local markets regulations, C.S.Co. predicted a figure of 8.55 metric tons of unsold cotton fiber in 1982-1983. This would have forced some cotton companies to cut down on their output or to close mills.

The bottom line of the issue in our view is whether to protect the cotton industry by reducing the importation of cheap clothes (especially second-hand clothes) or to protect the low income people (majority of the population) by importing these items.

The textile industry in Zaire, as stated earlier, uses about 10,000 people. It has a considerable weaving capacity as shown in Table 4.

The textile mills are supplied by different cotton companies according to the location and the capacity of the mill. Presently, there are two major cotton companies in the northern cotton belt and five in the southern cotton belt. Table 5 shows the different textile mills in Zaire and their major cotton suppliers.

Sixteen factories in Kinshasa and seven in Lubumbashi produce ready-made clothing, primarily shirts. Six factories, four of which belong to the integrated textile mills, manufacture cotton knitwear articles such as socks, underwear, baby clothing, etc. In addition to these factories, many hundreds of small clothing manufacturing enterprises are scattered throughout the country, especially in big cities. The textile industry

Table 4

RANKING OF THE MILLS BY WEAVING CAPACITY, ZAIRE, 1982

Enterprise	Cotton consumed in tons	Number of spindles	Number of looms	Capacity ₂ in 1000m	Fiber type
UTEXCO	9,000	71,000	1,382	60,000	Cotton
SOTEXKI	3,000	21,600	456	18,500	Cotton
FILTISAF	3,500	16,660	360	16,000	Cotton
SOLBENA	2,500	10,000	236	14,000	Cotton
AMATO	1,700	10,000	200	10,000	Cotton
NOVATEX	-	-	128	4,000	Synthetic
TOTAL	19,700	129,260	2,762	122,500	

Table 5

SOURCES OF COTTON FOR TEXTILE MILLS, ZAIRE, 1982

Textile Mill	Total Bales Received, 1981 ^{a/}	Cotton Companies						
		LA COTONNIERE	AGRICO	DATSCO	MBAYO	TSHILOBO	COTON ZAIRE	SOTEXCO
	bales of cotton (a).....						
UTEXCO	50,882	26,382	---	---	---	---	8,000	15,500
SOTEXKI	17,737	---	---	13,754	---	---	---	17,737
FILTISAF	16,751	2,997	13,754	---	---	---	---	---
SOLBENA	8,139	5,788	2,700	451	---	200	---	---
AMATO	6,096	3,795	1,800	301	200	---	---	---
ZAITEK	5,122	2,522	---	---	---	---	2,000	600
TEXKIVU	1,646	---	1,646	---	---	---	---	---
MOBILIA	909	246	---	---	---	---	500	163
TOTAL	108,282	41,710	19,900	752	200	200	10,500	35,000

^{a/}A bale of cotton is made up of a bundle of fibers bound into a package and weighing between 50 and 100 kg.

SOURCE: C.S.Co. Bureau, unpublished report, 1982.

contributes about 15 percent of the value added by the manufacturing sector to the GNP.

CHAPTER III

CURRENT SITUATION AND ANALYSIS OF PRESENT POLICIES

BUYING AND GINNING OF COTTON

In the struggle to increase cotton production, the government, through the Department of Agriculture, has tried to set up various programs and projects covering all aspects of cotton cultivation. When the private cotton companies were abolished in 1972, the government created ONAFITEX with sole responsibility for buying, ginning and sale of cotton. ONAFITEX was in fact, a "one channel government marketing office" with monopoly power. The office was empowered to raise or to lower seed cotton prices paid to the farmers. Presently, the cotton companies are responsible for marketing operations under the supervision of C.S.Co. They assure the buying and the ginning of cotton in the growing areas where they operate.

COTTON PRODUCTION PROJECTS

Cotton production in Zaire has long benefited from a lot of attention from the government and specialized institutions such as the World Bank and the European Development Fund (FED). In this section, the different projects and programs related directly to cotton production will be briefly reviewed.

Table 6

CURRENT INVENTORY OF COTTON GINS OPERATED BY THE COTTON
COMPANIES OF ZAIRE, 1982

Growing Region	Cotton Companies	Observation
Equateur	COTON-ZAIRE	11 ginneries in activity
Haut-Zaire	SOTEXCO	22 ginneries in activity 6 others in working conditions
Kasai Oriental and Maniema	LA COTONNIERE	17 ginneries in activity
Tanganika and Sud-Kivu	ESTAGRICO	8 ginneries in activity
Sud-Shaba	TSHILOBO-MBAYO and DATSCO	7 ginneries in activity
TOTAL		71

SOURCE: C.S.Co. Annual Report, 1981.

Programme de Relance de la Culture Cotonnière

Since 1979, C.S.Co. has been supervising an important program named PROGRAMME DE RELANCE DE LA CULTURE COTTONIERE or PROGRAM FOR RELAUNCHING COTTON CULTIVATION. This program jointly financed by IDA, FED, CCCE, SOFIDE, COTTON COMPANIES (Cottonnière, Sotexco, Estagrigo) and the government had initially started in 1978 under ONAFITFX. The numerical objective of the program is to reach, in five years, about 60,000 metric tons of seed cotton and, therefore, to attain a self-sufficiency in cotton as well as in textile materials. The program includes the following important points:

- rehabilitation of the feeder roads network,
- reinforcement of extension officers,
- intensification experiments,
- supply of working materials (improved handtools),
- rehabilitation of ginning mills, and
- rehabilitation and reinforcement of transportation vehicles.

Under the supervision of C.S.Co., the program is fully managed by the three cotton companies. Each one of them has been charged with responsibility for distribution of seeds to the farmers, vulgarization operations, buying seed cotton from farmers, transporting and ginning seed cotton. These companies have sufficient facilities for handling the production, and their cooperation with C.S.Co. in this regard has been excellent.

The total cost of the program in its final stage has amounted to 39.3 million \$ U.S. Financing operations started in 1981 with money from FED, SOFIDE and CCCE. The credits for IDA will be dispatched some time during 1982, along with vehicles and spare parts to be furnished by the same institution. Spare parts and parts for the ginning mills are expected sometime

in 1983, and by December 1984, the government, through C.S.Co., is expected to present to its creditors a final report on the program. Table 7 provides some estimated figures on cotton production during the five years of the program.

The project, Mission de Relance de la Culture Cotonnière dans l'Equateur, was set up in 1972 under an agreement between the Zairian and the French governments. A French team of four technicians from C.F.D.T. came to work with ONAFITEX technicians to develop cotton production in the Equator region. This project was mainly involved in developing cotton production through improved agricultural extension services and served as a feasibility experiment for another project actually financed by three institutions: the World Bank, the Belgian Cooperation and the Zairian Government. It is under the management of COTON-ZAIRE.

The PMKO⁹ Project in Eastern Kasai

The project is located in the eastern Kasai region and is jointly financed by the government, B.A.D.,¹⁰ FIDA, and I.D.A. The PMKO project is a fusion of former Tshilenge project in Kasai and CAKO.¹¹ The project is mainly concentrated on corn production, but is actually diversifying its activities to other crops such as cotton, rice and soybeans.

⁹PMKO: Projet Mais au Kasai-Oriental or Kasai Oriental Corn Project.

¹⁰BAD: Banque Africaine de Developpement or African Development Bank.

¹¹CAKO: Commission Agricole du Kasai Oriental or Agricultural Commission for Eastern Kasai.

Table 7

C.S.CO.'S PROJECTIONS OF COTTON PRODUCTION FOR FIVE YEARS OF PROGRAM BEGINNING 1980, ZAIRE, 1982

Year	No. of farmers	Size of farm	Total area	Yield	Production	Under insect control	Expected yield increase	Expected production increase	Expected total production
		ha	1,000 ha	tons/ha	1,000 tons	1,000 ha	kg/ha	tons	1,000 tons
HAUT-ZAIRE: SOTEXCO									
1980	102	.27	27.5	.27	7.4	---	---	---	7.4
1981	92	.27	24.8	.26	6.4	---	---	---	6.4
1982	96	.30	28.8	.30	8.6	2.0	280	560	9.2
1983	100	.35	35.0	.35	12.2	3.0	320	960	13.2
1984	102	.40	40.8	.38	15.5	4.0	320	1,280	16.8
1985	102	.40	40.8	.40	16.3	4.0	320	1,280	17.6
KASAI - MANIEMA: COTONNIERE									
1980	105	.35	36.7	.37	13.6	---	---	---	13.6
1981	95	.35	36.7	.37	13.6	---	---	---	12.0
1982	100	.45	45.0	.38	17.1	3.0	320	960	18.1
1983	105	.50	52.5	.41	21.5	4.0	336	1,344	22.8
1984	105	.50	52.5	.43	23.6	5.0	336	1,680	25.3
1985	105	.50	52.5	.45	23.6	5.0	336	1,680	25.3
NORD SHABA: ESTAGRICO									
1980	38	.36	13.7	.36	4.9	---	---	---	4.9
1981	30	.40	12.0	.40	4.8	---	---	---	4.8
1982	34	.45	15.3	.42	6.4	3.0	344	360	7.4
1983	38	.48	18.2	.44	8.0	4.0	360	1,376	9.4
1984	38	.50	19.0	.46	8.7	5.0	360	1,800	10.5
1985	38	.50	19.0	.50	9.5	6.0	360	2,160	11.7

Table 7 (Cont.)

Year	No. of farmers	Size of farm	Total area	Yield	Production	Under insect control	Expected yield increase	Expected production increase	Expected total production
TOTAL: ALL AREAS									
1980	245	---	78.0	---	25.9	---	---	---	22.9
1981	217	---	70.0	---	23.2	---	---	---	23.2
1982	230	---	95.3	---	32.1	8.0	---	2,480	34.6
1983	243	---	105.7	---	41.7	11.0	---	3,680	45.4
1984	245	---	112.3	---	46.8	14.0	---	6,760	51.6
1985	245	---	112.3	---	49.4	15.0	---	5,120	45.5

SOURCE: C.S.Co., unpublished document.

The objectives of the project are:

1. To eliminate corn production deficit in Eastern Kasai by producing over 70,000 tons.
2. To improve standards of living of farmers in Eastern Kasai by providing them with necessary tools to increase farm income.

The introduction of drying and insect control equipment in the area, as well as the experimentation with improved seeds, fertilizers, pesticides and tractor mechanization, are the most important activities of the project. As to cotton production of PMKO, the following figures were reported in December, 1981 (Table 8). The government is participating with about 16% of the total cost of the project which represents some 6.1 million \$ U.S. The share of other institutions is as follows:

B.A.D. (African Development Bank):	17%
F.I.D.A.	39%
I.D.A.	28%

Cotton Project of INERA

INERA¹² is an important government sponsored agricultural research institution and one of the most important in Central Africa. Several studies and experiments have been conducted by the institute on various food and industrial crops. Research on cotton is underway in three different centers:

Gandajika Center. The Gandajika Center is actually involved in cross-breeding the African cotton variety *Gossypium snomalum* (diploid) with other tetraploid varieties;

¹²INERA: Institut National pour l'Etude et la Recherche Agronomique or National Institute for Agronomic Study and Research (formerly INEAC).

Table 8

COTTON ACTIVITY OF PMKO PROJECT, ZAIRE, 1982

Zone	Area cultivated	Seed variety	Yield	Production
.....hectare.....			kg/ha	tons
TSHILENGE	376.97	NC8	456	1,528.990
MUENE DITU	4,100.26	NC8	452	1,853.318
GANDAJIKA	4,856.00	NC8	449	2,179.971
KAMIJI	301.04	NC8	452	136.070

SOURCE: PMKO Annual Report, 1981.

Gossypium anomalum	X	B49
"	"	X BJA 592
"	"	X 1021
"	"	X Reba B50

Bambesa Experimental Center. At the Bambesa station, some 50 hectares of land are being used to test and to compare the most popular variety, Reba B50, to the selected new seeds from the Gandajika fields.

Bokets Experimental Center. This is a multiplication center where selected seeds are reproduced. They are actually testing and multiplying new varieties from the cross-breeding of HR-219 X BJA 592 and HR-219 X Reba BTK 12.

INERA is also conducting fertilizer and pesticide tests on different varieties of cotton. It is important to notice that INERA (formerly INEAC) is playing a central role in the development of the agricultural sector in Zaire. Endowed with 24 main research stations, 22 experimental stations and several pilot farms equipped with complementary laboratories, INERA has sufficient capacity to provide seed material for a large scale propagation of food and cash crops all over the country. The institute is currently confronted with financial problems and is not therefore running at its full capacity.

Government Expenditures on Cotton Production

Given the magnitude of the food shortage and the high rate of demographic growth (2.7 percent), it was decided back in 1972 that agriculture be the first priority in the government budget. Although the government has made some efforts in this regard, the portion of the budget allocated to agriculture remains relatively small. This contradictory reality is

obvious and the problem of shortage in agricultural products is getting worse in Zaire. Table 9 gives an idea of the government expenditures on the agricultural sector--as compared to other sectors.

For the four years (1978, 1979, 1980 and 1981), agriculture averaged 2.2 percent and transportation-communication averaged 0.8 percent--a total of only 3.0 percent for two of the country's most important sectors.

As to the cotton production, the direct government expenditures on that subsector could be drawn from the government participation in the different cotton projects. As pointed out earlier, the government is a shareholder in the largest cotton companies. Its participation is mainly concentrated on investment funds and real estate. In fact, the government has provided them with facilities previously owned by C.A.FITEX except for houses that are rented to the companies. About 345,000 cotton farmers are actually working in the areas covered by those companies.

The Programme de Relance de la Culture Cotonnière au Zaire project is partially financed by the government in local currency (Zaires)¹³ and partly by foreign exchange (U.S. dollars). Table 11 shows the share of different financing sources of the project. Eighteen percent of the total cost of the project is supported by the government, which finances all the current expenditures and parts of investment expenditures related to feeder road improvement and extension operations. In order to encourage private and foreign investors, the government has been participating actively in different projects aimed at increasing cotton production and has set a favorable framework for further research on cotton.

¹³The Zaire is the domestic monetary unit. The current legal rate of exchange is oscillating around 1.0 dollar for 5.8 Zaires. About 10 years ago, the rate was 1.0 dollar for 0.5 Zaires. The current market rate of exchange is approximately 29.0 Zaires for \$1.00.

Table 9

ALLOCATION OF INVESTMENT BUDGET TO SELECTED SECTORS OF THE ECONOMY, ZAIRE, 1978-1981

	1978		1979		1980		1981		4 years average	
	Mil Z's	%	Mil Z's	%						
Agriculture	12.0	1.2	68.9	2.8	27.9	0.9	128.0	2.5	59.2	2.2
Education	131.9	12.8	664.3	27.3	589.9	20.1	950.8	18.3	418.2	15.3
Public Health	44.8	4.4	93.3	3.8	97.0	3.3	160.3	3.1	98.8	3.6
Public Debt	447.3	43.6	550.2	22.6	932.5	31.7	957.9	18.5	722.0	26.4
Transportation and Communication	7.3	0.7	21.6	0.9	24.7	0.8	28.3	0.5	20.5	0.8
Other Sectors	383.7	37.4	1,038.3	42.6	1,265.5	43.1	2,962.2	57.1	1,412.4	51.7
Total budgets ^{a/}	1,027.0	100.0	2,436.6	100.0	2,937.5	100.0	5,187.5	100.0	2,721.1	100.0

^{a/}The total of sectors, including the five selected ones.

SOURCE: République du Zaire, "Conjoncture Economique," Département de l'Economie Nationale et de l'Industrie, Kinshasa, December 1981.

Table 10

THE SHARE OF THE GOVERNMENT IN THE INVESTMENT OF THE THREE COTTON COMPANIES,
ZAIRE, 1981

Cotton companies	Total investment	Government participation	Other shareholder participation	
	1,000 Zaires	percent	percent	
SOTEXCO	2,900	30.0	Sotexki	55.0
			Utexco	7.5
			Ameto	2.5
			Zaitex	1.5
			Solbena	3.5
LA COTONNIERE	6,700	36.9	Colocoton	26.1
			Utexco	24.6
			Ameto	6.1
			Solbena	6.1
ESTAGRICO	1,850	32.6	Amato	10.8
			Filtisaf	24.3
			Solbena	10.8
			Utexco	10.8
			Zaitex	10.8

Table 11

FINANCING SOURCES FOR THE "PROGRAMME DE RELANCE DE LA CULTURE COTONNIERE
AU ZAIRE," ZAIRE, 1981

Financing Sources	Millions of U.S. Dollars	% of the Total Cost of the Project
IDA	11.3	28.8
FED	6.8	17.3
CCE	2.2	5.6
SOFIDE	1.1	2.8
Zaire Government	7.0	17.8
Cotton Companies	10.9	27.7
Total Costs	39.3	100.0

SOURCE: C.S.Co., unpublished document, 1981.

COTTON PRICING POLICY

In Zaire, setting prices is the appanage of the Department of National Economy (or ministry of Economy). In the agricultural sector, prices are discussed and proposed within the Department of Agriculture and submitted for the approval of the Department of National Economy. The current pricing policy focuses on minimum producer prices for food and export products, maximum wholesale food prices, fixed producer prices for crops sold to government marketing agencies and fixed marketing margins for the wholesale and retail levels.

As to cotton pricing policies, they have been changing widely according to people and institutions that take over responsibilities for cotton production. In the pre-independence period, the price was set annually on the basis of the prices obtained for cotton fiber in the previous year. Because of the world price fluctuations, a price stabilization fund was established in 1938. At that time, the seed cotton price paid to the farmer was derived from a potential cotton price which was determined from the average cotton fiber price realized in the preceding year.

The difference between the "potential" price and the price received by farmers was deposited in the price stabilization fund (Fonds de Réserve). Currently, it seems that cotton price is no longer set on the basis of technical considerations. The new policy is more humanitarian and conjuncture oriented. The objective is to help cotton farmers, by setting higher prices, keep up with a persistent inflation which tends to lower the purchasing power of the farmer. In fact, since 1975, the general level of prices of manufacturing goods as well as agricultural products has been rising and the inflation rate reached more than 150% by the end of 1980.

Table 12 shows the effects of inflation on the price of seed cotton over a period of seven years (1975 - 1981). The Consumer Price Index (CPI) used in the table was developed by the National Institute of Statistics (INS) for consumer goods in Kinshasa. In its report (June 1981), the Department of Agriculture requested an increase of seed cotton price from .80 to 1.80 Zaires per kilogram. This increase brought the price of ginned cotton up to 12 Zaires per kilogram.

The Department is even forecasting a worse conjuncture ahead and has proposed a much higher price of 2.2 Zaires per kilogram of seed cotton. This new price has raised the cost of cotton fiber to 15 Zaires per kilogram. This figure is lower than that of imported cotton fiber by quite a large amount.

According to the President Director General of C.S.Co., quoted by Muteba wa Kambala in his study on cotton marketing in Zaire, the price per kilogram for imported cotton fiber is presently around 50 to 55 Zaires CIF Matadi.¹⁴ This shows that Zairian cotton fiber keeps a competitive position on the world market basis and that producing cotton in Zaire could be a profitable activity.

Furthermore, given a price of 55 Zaires per kilogram for imported cotton fiber, nobody can afford to buy large quantities of cotton fiber on the international market using the market rate of exchange. It could be concluded with regards to these considerations that the future of cotton production in Zaire is promising.

By fixing the minimum producer price at 2.2 Zaires per kilogram of seed cotton, the Department of Agriculture is hypothesizing that cotton

¹⁴Matadi is the main deepwater port on the Zaire River estuary connecting directly with the Atlantic Ocean.

Table 12

NOMINAL AND DEFLATED PRICES OF SEED COTTON, ZAIRE, 1975-1981

Year	Seed cotton price makuta per kg	CPI 1981 = 100	Deflated seed price makuta per kg
1975	35	6.4	546.9
1976	40	10.5	381.0
1977	45	19.1	235.6
1978	52	37.8	137.6
1979	85	55.7	152.6
1980	85	75.0	113.3
1981	120	100.0	120.0

SOURCES: Prices were obtained by interview with personnel at the C.S.Co. office in Kinshasa. The CPI for the city of Kinshasa, was obtained from the Institute National de Statistiques.

cultivation will become more attractive and that this will beef up the production. Nevertheless, this is only as hypothesis; the problem needs to be looked over carefully as to what would happen if the production does not follow the increase in price. This could be illustrated by the following graph (Figure 1).

If cotton production is actually at a supposedly equilibrium point, though not a stable one, with price at P_0 and quantity available at Q_0 , what would happen if the government puts in practice a new price P_1 ($P_1 > P_0$)? If the increase in prices from P_0 to P_1 is viewed by farmers as an incentive to grow more cotton, then the production level is expected to be at Q_2 . The problem here would be to stimulate the demand for seed cotton at the price P_1 .

If the increase in price (P_0 to P_1) is counterbalanced by other factors, such as cost of production, inflation, etc., and therefore has no positive effect on the farmers' revenue, we would not expect an increase in production. On the other hand, cotton companies would cut down on quantity taken from Q_0 to Q_1 and this would drag along other consequences which would jeopardize cotton production.

According to the President Director General of C.S.Co., the price of seed cotton would have to be 2.5 times the price of corn in order to be competitive with corn as an enterprise. That estimate is based on relative yields, labor requirements and possibly other factors. Based on data obtained during this study, that appears to be a good estimate. If seed cotton price does not exceed corn price by approximately that ratio, the opportunity cost for growing cotton will be too high.

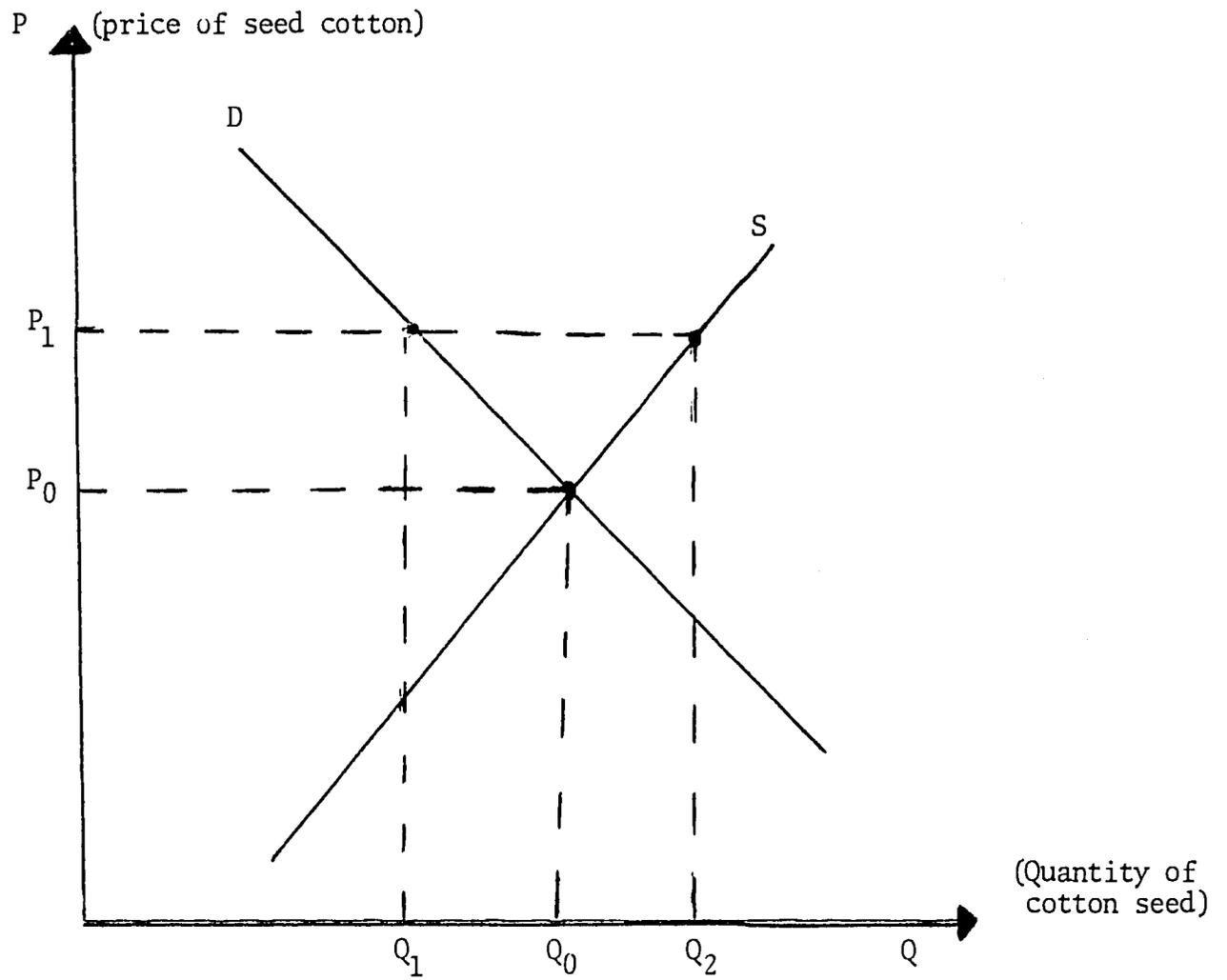


Figure 1. SUPPLY AND DEMAND FOR COTTON UNDER ASSUMED PRICE CHANGES

EVALUATION OF CONSTRAINTS ON COTTON PRODUCTION AT THE
FARM LEVEL

Zairian agriculture is still dominated by traditional practices. The small scale, family holding is mainly characterized by hard work, small individual farm style, low yields, reliance on family labor, predominance of hand tools--and a low farmer's income.

The original plan of this study was to analyze cotton supply in Zaire. The idea was to check the relationship between cotton production and prices paid to farmers and to determine the major constraints on cotton production through personal contacts with farmers in selected areas. Such a study would yield valuable insight on how to overcome barriers to increasing cotton production.

The areas visited by the author included the following centers:

- (1) Centers of Titule and Dembia in the sub-region of Bas-Ueles (Northern cotton belt)
- (2) Centers of Musenge and Tehala in the sub-region of Lualaba (Southern cotton belt)

Spencer (1972) distinguished different methods for collecting data on traditional farms. The method used here is close to the farm business survey, except that selected farmers were not visited several times, but only once. In fact, time and budget constraints would not allow the author to pay more than one visit to farmers in one area.

Transportation problems in the remote areas of the country and difficulties related to the wide dispersion of cotton growing centers made it hard to contact more than 70 farmers in each one of the two sub-regions. One hundred and forty farmers were then picked randomly from a list of

HAV¹⁵ held by the agricultural extension service officer in each center. The questionnaire being more qualitative than quantitative and knowing that cultural practices are nearly the same all over the country, it was judged that the problem of representativeness of the sample¹⁶ was not a serious one. In addition, as said by E. Tollens (1975), although statistical theory helps us to determine the degree of representativeness of a sample, it is difficult to apply this theory to a farm management survey in the African context; mostly because of a lack of recorded data on production and costs.

Work Operations and Cultural Practices

Cultural conditions. Climatic conditions, in general, are favorable for cotton cultivation in most areas of Zaire, as the temperature never goes below 5 degrees Celsius (except on the mountains) nor above 38 to 40 Celsius. Average annual rainfall is between 1,400 and 1,800 mm in the south and between 1,700 and 1,900 mm in the northern cotton belt. Cotton requires a dry season of three to four months for a complete maturation of cotton bolls and a minimum of 400 to 500 mm of well-distributed rainfall for a normal growth. The area north of the equator is characterized by a dry season from December to February. Of the 70 farmers visited in the Bas-Ueles sub-region, all of them planted cotton sometime between June and July. In the southern area of Lualaba sub-region, the dry season goes from mid May to August and cotton is planted in January. However, there is a considerable variation of soil quality from one area to another and

¹⁵HAV: Hemme adults valide or able-bodied adult male.

¹⁶A sample of 140 cotton farmers represents roughly 10 percent of the total of farmers in the two visited sub-regions.

this fact may be regarded as a constraint to cotton production. In fact, soils under forest coverage in the northern cotton belt are more fertile than savanna soils of the south, since they have more humus and a better moisture retention. There is, in general, a need for using chemical fertilizers to help revitalize soils and a pressing necessity for using fertilizers to increase yields. Of the 140 farmers visited, none was using fertilizer to grow cotton.

Cultural practices. The choice of a plot of land to put under cultivation depends on such factors as local customs, superstitions, familial alliances, etc. This explains the fact that one farmer could cultivate three different plots scattered on different fields. Although the government decided back in 1973 that all land belonged to the State and that a farmer gains right to a plot of land by putting it under cultivation, the traditional land tenure system still exists in some places.

As said earlier, cotton is cultivated in both the forest and the savanna areas. In forests, the clearing of land is hard and is labor intensive. Axes and machetes are used for clearing the field (cutting down the trees). The first job is performed by man, followed by a second operation which consists of burning up the bushes. Planting is done either in rows or in disorderly lines depending upon the direction of the fallen boles of the trees.

In the savanna area, the breaking up of the land is much easier. ONAFITEX recommended the following schedule of work for the southern area:

Land clearing: October to December

Land preparation: December 15-31

Planting: January 1-15

First Weeding: January 20-Feb. 5

Thinning: January 20-Feb. 5

Second Weeding: Feb. 25-April 10

Harvest: June-July

In forests, experience has proven that cotton planting should be preceded by a pre-culture of some food crop to help clear the land of excess nitrogen. Also, as stated by most of the farmers interviewed, cotton requires more work per year and yields a lower rate of return than many food crops. So, growing cotton alone will not pay for the amount of work furnished to produce it. Farmers in the savanna, as well as in the forest areas, used the same argument to support intercropping of cotton.

In the northern area, the following schedule was recommended by ONAFITEX in view of the amount of work required, the nutritional needs of the people in the area, and the pedologic advantage of pre-culture on the cotton field:

Land clearing: November to March

Land preparation: March 1-15

Planting of corn or
peanuts: March 15-April 15

Harvest of corn or
peanuts: June 15-July 15

Planting of cotton: July 1-15

Thinning: July 20-Aug. 5

Weeding: Aug. 20-Oct. 5

Harvest of cotton: December-January

In savanna area, a maximum spacing of 100 centimeters between rows and 40 centimeters within the row were recorded while a maximum spacing of 60 centimeters between rows and 20 centimeters within the row recorded

in the rich soils of the northern forest areas. The author recorded also an average of six to eight seeds per pocket which amounts to some 20 to 80 kilograms of seed per hectare. These figures were recorded in the south where the author visited during the planting period. As shown earlier, the first weeding should be done three weeks after planting, followed by another one, and by a thinning operation. Harvest starts when the cotton bolls spring open.

When declining soil fertility causes yields to fall below an acceptable level, a new tract of land must be cleared and cultivated; the original field will then be left in grass or brush fallow. The duration of the fallow period depends therefore on the natural fertility of the soil, the climate, the vegetative cover and the population density. In the northern area of Bas-Ueles where there is almost no pressure on the land, the fallow period extends from six to 12 years or even more. In the more densely populated areas of Lualaba sub-region, the fallow period is shortened to some three to six years to provide a more rapid re-use of the land.

The crop rotation varies from one area to another, depending upon the needs of the population in food crops, the climate, etc. The crop rotation actually in practice is close to the one prescribed by Brixhe (1958):

In Lualaba sub-region (southern cotton belt)

1st year: December-July: cotton

September-December: corn

2nd year: December-July: cotton

September-December: peanuts

3rd year: December-June: corn and manioc
(cassava)

September-December: manioc

4th year: : fallow

The shortness of the fallow period in the south could be explained by the high population density and the high demand for cotton fiber of the textile mills located in the Shaba (formerly Katanga) region.

In Bas-Ueles sub-region (northern cotton belt)

1st year: March-April: planting corn (pre-culture)

June-July: planting cotton

2nd year: March-April: planting rice, peanuts or corn

June-July: planting manioc and bananas

3rd year and 4th year: manioc and bananas

5th year: fallow

The crop system has been advantageous as some crops have proven to be complementary (manioc and bananas) and others (corn) necessary as a pre-culture for cotton, especially in the forest area. In fact, using corn as a pre-culture for cotton helps not only to clear the land but to eliminate the excess nitrogen which stimulates vegetative development of cotton and hinders the development of cotton bolls (Brixhe, 1968).

Infrastructure

The visited sub-regions of Bas-Ueles and Lualaba are crossed throughout by small rivers that flow into the big Zaire river and this is true for many areas all over the country. Some of these rivers or parts of them (like the Uele river) are unfortunately not navigable, making those areas dependent on roads or railroads to evacuate their products. Most

of the roads are, in turn, linked with many bridges which are seldomly in use 12 months of the year. In fact, many bridges are subject to periodical breakage, and quite often out of use because of periodical floods. Roads are in fairly poor condition in the remote areas resulting in delays in buying cotton from farmers and in high transportation rates charged by transportation companies.

The handling of seed cotton (loading and unloading of trucks) was estimated in 1982 to cost 2.50 Zaires per ton. The railroad connections in the Bas-Ueles sub-region have provided a very useful service in sending on cotton to the river port of Bumba, not to mention the collecting of cotton and other food crops from the Isire, Titule, Buta, Aketi and Bondo centers.

Since 1978, there has been an encouraging increase in cotton production (from 8,800 tons in 1978 to 11,200 tons in 1979 in the southern cotton belt) and this effort could rapidly be cut down if the road infrastructure keeps on disintegrating. C.S.Co., in its annual report of the year 1981, gave the following figures in relation to the feeder roads that need to be restored in each cotton growing area:

(1) Kasai and Maniema

Total: 4,260 kilometers of feeder roads. The total cost of maintenance was estimated at 547,240 U.S. dollars and 4,669,894 Zaires.

(2) Haut-Zaire

Total: 5,164 kilometers of feeder roads. The total cost of maintenance was estimated at 556,500 U.S. dollars and 4,966,455 Zaires.

(3) Nord Shaba and Ruzizi

Total: 1,800 kilometers of feeder roads. The total cost was estimated at 311,870 U.S. dollars and 1,568,948 Zaires.

(4) Lualaba and Haut-Lomami

Total: 2,000 kilometers of feeder roads. The total cost was estimated at 290,670 U.S. dollars and 1,340,000 Zaires.

Agricultural Inputs

Several tests on the field by the Programme National Engrais or National Program for Fertilizers have shown that cotton yields could go up substantially--even in traditional agriculture (i.e., non-mechanized). Experiments on the use of pesticides have also demonstrated that treated fields could easily yield 800 to 1,000 kilograms of seed cotton per hectare.

The use of chemical fertilizers and pesticides is still at an experimental level as far as cotton is concerned and none of the farmers interviewed in the Bas-Ueles and Lualaba areas had ever applied those inputs on his farm. Some farmers, however, were well aware of the existence of such inputs and expressed their willingness to use them. The limited use of improved agricultural inputs is not the least of the constraints to the increase of cotton production in Zaire.

As for the hand tools used for farming, most of the farmers in the northern area complained of the non-availability of these items at the local shops. Most of the tools (axes, machetes, hammers, hoes) were over two to three years old, and finding a blacksmith in the neighborhood was just as hard as getting money to buy new ones.

The opening of a new agricultural small hand tools factory in Kinshasa (UMAZ) illustrates the government preoccupation with promoting agricultural

production. The UMAZ¹⁷ opened in 1979 in Kinshasa with a relatively small capacity of some 700,000 machetes, 600,000 hoes, 30,000 to 50,000 axes and 100,000 shovels per year. As for most of the factories all over the country, the problem of getting foreign exchange has hurt the young factory so that the 1981 output was less than half its full capacity. The factory was set up with financial assistance from the People's Republic of China (2/3 of the costs) and the Zaire government (1/3 of the cost). An interview with the director revealed that the factory has not been able to sell its 1981 production since the performance of the middlemen (i.e., the government) has not been efficient enough to serve the needy farmers in the remote country side. Most of the farmers expressed their hope to see the cotton companies play a useful role in making hand tools available.

In his feasibility study on mechanization of cotton cultivation in Tanganyika and South Maniema sub-regions, J. M. Moreau, 1978, concluded that farmers' revenues could be higher and cotton yields improved by using tractors and fertilizers. Mechanization would reduce the heavy burden of labor input and would permit farmers to expand farm size (Table 13).

These figures, especially those related to costs, need to be updated. Although they show some economic advantages to the farmer from mechanization and the use of fertilizer, they show that returns per man-day were increased much more by the use of insecticides (Table 13). Steps need to be taken at the policymaking level in order to introduce the use of such inputs in an organized fashion through cooperatives, cotton companies, etc. The future of the industry depends partially on the use of efficient

¹⁷The Tanganyika and South Maniema sub-regions are both located in the southern cotton belt.

Table 13

EFFECT OF MECHANIZATION AND THE USE OF INSECTICIDES ON FARM
INCOME, TANGANYIKA AND SOUTH MANIEMA SUB-REGIONS, ZAIRE, 1978

Cost or income item	Traditional cultivation	Traditional cultivation plus insecti- cides	Mechanization plus fertilizers
Farm size (hectares)	0.30	0.30	0.75
Yield per hectare (kilo- grams)	400.00	800.00	1,600.00
Quantity to sell (kilo- grams)	120.00	240.00	1,200.00
Fixed costs (Zaires)	13.00	18.00	18.00
Costs of intensification (Zaires)	---	---	202.50
Gross revenue (Zaires)	95.40	212.40	1,062.00
Net revenue (Zaires)	77.40	194.40	616.50
Labor (man-days)	55	63	180
Return per man-day of labor (Zaires)	1.41	3.08	3.43

SOURCE: Ir. J. M. Moreau: Etude de Faisabilite de la Mecanization de la Culture du coton, Unpublished document, Kinshasa, Zaire, 1978.

inputs.

Storage

Growing cotton involves a number of risks, the crop being sensitive to changes in weather (temperature, humidity, rainfall) and storage conditions. Soon after harvest, cotton should be stored in a cool place, well ventilated, to allow the air to go through the tuft.

About 98 percent of the visited farmers stored their cotton in baskets weighing 20 to 30 kilograms placed on drying racks. Only 22 percent of the respondents had built separate huts as places of storage for cotton baskets. All the respondents sold all their cotton at one time, most of them arguing that the storage facilities must be freed in order to store other crops. A handful of farmers explained that they had to hurry because the buyer did not show up but once every six months, and they could not afford to take their production to the ginneries by themselves.

Nowhere in the two visited sub-regions was cotton grown for other purposes than to be sold. This constitutes another risk involved in growing cotton--especially in a country with a poor marketing system: no alternative use for it on the farm.

Agricultural Credit

There has been a number of experiments with bank loans and agricultural products in Zaire; unfortunately, these experiments have not been very successful.

In the pre-independence period, loans were granted by credit institutions, but the credit terms were too strict in terms of requirements for material guarantees or collateral to allow Zairians to qualify for

them. Later on, the colonial authority decided on the creation of a "special fund for agricultural credit" destined to serve local farmers who could provide sufficient material guarantees.

After 1960, some credit institutions were set up through private banks. The "Fonds Congo" was created soon after independence in order to help local settlers take over the abandoned plantations. This first experience did not go too far as most recipients confused loans with grants. Then were created successively CADEZA (Caisse Generale d'Epargne du Zaire) or National Savings and Loan Institution, SOFIDE (Societe Financiers de Developpement) set up with aid from the World Bank, and the Credit Agricole Controle or Supervised Agricultural Credit financed partially by the U.S. Agency for International Development. These newborn institutions initially conceived to participate actively in the promotion of the agricultural sector have channeled only a negligible part of their credits into agriculture. By the end of 1971, the "Credit Agricole Controle" disappeared and part of the funds were transferred to the National Maize Program (PNM).

The National Bank of Zaire actually regulates the credit activities of private banks and since 1974, commercial agricultural credit has benefited from the lowest interest rates charged by private banks (Tollens, 1975). Each private or semi-private bank has a minimum quota for credit which it has to lend to agricultural enterprises. However, some other studies have mentioned that the low legal rate of interest, coupled with high inflation, has made agricultural loans create a loss to lenders instead of a return. This effectively shuts off credit in agriculture. Thus, the low legal rates are not necessarily an effective help to farmers.

In January 1982, the government announced the creation of a new credit institution, the "Banque de Credit Agricole" or Agricultural Credit Bank

with a capital of 20,000,000 Zaires. The bank regulations were not available at the time this paper was written, but it was reported that loans should be made to middle class and small farmers through cooperatives.

Some cotton companies are actually in the process of providing small amounts of credit in kind (tools and planting materials). The repayment in kind (equivalent in value of seed cotton) should be made at harvest. This practice has been praised by cotton farmers, especially in the Bas-Ueles, even though they know little about the reimbursement rate.

Up to 1978, ONAFITEX was providing services such as the treatment of cotton fields with pesticides free of charge, and most important, financing cotton marketing operations. This "credit in kind" was covered by the difference between the final sale value of cotton fiber and the price paid to the farmer after deduction of all processing costs.

Although lack of credit is frequently cited as an important constraint to agricultural production in Zaire, it would not be an efficient input for cotton until the price of cotton makes the farm production of cotton profitable--and on a competitive basis with alternative crops.

CHAPTER IV

FEASIBILITY COMPARISON OF COTTON AND ALTERNATIVE ENTERPRISES

LABOR REQUIREMENTS

The calculation of cost of production at the farmer's level for a small scale type of operation seems complicated. In fact, most of the changes, if not all, had to be estimated because of the non-availability of written records and the predominance of family labor (non-hired labor). As to the labor requirements for one hectare of cotton, references were drawn from INEAC (presently INERA) publications which were in turn slightly adjusted by the author in the light of his visits to the field (Table 14). Of the 140 farmers included in the sample, none spent money on fertilizers and pesticides. However, about 22 percent of the farmers in the northern cotton belt and some 31 percent in the south reported that their cotton fields had been treated with pesticide without charge by ONAFITEX extension agents. The remainder grew their cotton without any pesticide treatment and the reason could be the wide dispersion of cotton fields, especially in the forest area.

LEVEL OF INPUTS USED

Harvesting labor requirement was estimated on the basis of 25 kilograms of seed cotton per man-day and an optimum of 400 kilograms of seed cotton

Table 14

LABOR REQUIREMENTS FOR ONE HECTARE OF COTTON, ZAIRE, 1982

Task	Forest area	Savanna area
	Northern belt	Southern belt
man-days.....	
Clearing and breaking	110	100
Planting	15	15
Weeding ^{a/}	45	30
Harvesting	16	16
Uprooting and burning dried stumps	<u>10</u>	<u>10</u>
Total	196	171

^{a/}Weeding in the forest area is done three times and requires 15 man-days each time. In the savanna area, weeding is also done three times, but requires only ten man-days each time.

SOURCE: Based on data published by INERA, but adjusted slightly based on data from survey done by the author.

per hectare. As the figures above illustrate, cotton production is labor-consuming and none of the visited farmers hired labor. E. Tollens (1975) reported that on the average, 3.89 units of family labor were available per farm. The following figures related to the size of the family were recorded in the visited centers of Bas-Ueles and Lualaba sub-regions (Table 15). An average of 2.1 children of working age per farm was recorded in Lualaba and about 2.5 in the Bas-Ueles sub-regions. Labor from children of working age is taken for granted--except for those who have either migrated to the city or have become heads of their own families somewhere else. In addition, communal labor and free labor in mutual exchange is quite usual all over the country.

Most of the farmers, as well as the group of children staying with them on the farm, have little education. The figures below show the level of education of the selected 140 farmers in Bas-Ueles and Lualaba (Table 16).

At this relatively low level of education, the cost of labor at the farmer's level could be roughly compared with the legal wage rate of an uneducated government employee (door-keeper) which is in fact the lowest monthly pay rate of 96 Zaires (base salary). Of course, the "take home" pay for the government employee could range somewhere between 120 and 150 Zaires, adding up all items.

Seeding materials were provided by ONAFITEX which had in turn the monopsony rights to buying seed cotton (one channel marketing). Since 1978, this task is performed by the cotton companies in the areas where they operate.

As to the hand tools used per hectare for farming, the following

Table 15

FAMILY SIZE OF SELECTED FARMERS IN BAS-UELES AND LUALABA
SUB-REGIONS, ZAIRE, 1982^{a/}

Number of children of working age (above 15)	Bas-Ueles frequency of class	Lualaba frequency of class
farms.....	
0 - 3	61	66
4 - 7	7	5
8 - 11	<u>2</u>	<u>--</u>
Total	70	70

^{a/}All farmers included in the sample had only one wife, although polygamy is sometimes practiced in these areas.

SOURCE: Data collected by the author.

Table 16

LEVEL OF EDUCATION OF SELECTED FARMERS IN THE BAS-UELES AND
LUALABA SUB-REGIONS, ZAIRE, 1982

Years of schooling	Bas-Ueles	Lualaba
0 - 6 (primary school)	41	29
7 - 9 (orientation cycle)	21	31
9 - 12 (secondary school)	<u>8</u>	<u>10</u>
Total	70	70

SOURCE: Data collected by the author.

figures were recorded:

2 files every two years =	20 Zaires X 2 ÷ 2 =	20 Zaires
2 hoes every two years =	25 Zaires X 2 ÷ 2 =	25 Zaires
2 machetes every two years =	25 Zaires X 2 ÷ 2 =	25 Zaires
2 axes every two years =	25 Zaires X 2 ÷ 2 =	<u>25 Zaires</u>
Total		95 Zaires/year

YIELDS AND GROSS RETURNS OF SELECTED CROPS

Gross Returns

In the Lualaba and Bas-Ueles sub-regions, cotton was grown together with corn, rice, peanuts or cassava (more than 50 percent of the farmers included in the sample followed that pattern). As a consequence, the individual yields obtained from each crop were relatively low.

During the survey, farmers were asked how much they received last season for fifty acres (1/2 hectare) of cotton, corn, rice, peanuts and cassava. After much discussion, they decided on 225 Zaires for cotton, 618 Zaires for peanuts, 1,012 Zaires for corn, 980 Zaires for rice, and 2,550 Zaires for cassava (Table 17).

The agricultural extension agents concurred with the estimates made by the farmers, but added that those who followed all planting advice earned as much as 450 Zaires for cotton alone. To this, the farmers responded that such a man would be losing too much time that could be spent on the other crops.

Taking into consideration the price per unit for each crop and the labor requirements in terms of man-days for each activity, it was possible to get a rough estimate of labor return per man-day (Tables 18 and 19).

Table 17

YIELD AND GROSS RETURNS REPRESENTATIVE OF SELECTED CROPS IN
THE BAS-UELES AND LUALABA SUB-REGIONS, ZAIRE, 1982

Crop	Yield kg/ha	Price (per Kg)Zaires.....	Gross return (per Ha)
Cotton	250	1.80	450
Peanuts	700	2.80	1,236
Corn	650	1.90	2,024
Rice	450	4.50	1,960
Cassava	3,400	1.50	5,100

SOURCE: Gross revenue computed by the author. Gross return is total yield times price. Farmers actually do not sell all of their production.

Table 18

LABOR REQUIREMENTS FOR ONE HECTAIRE OF LAND PLANTED TO SELECTED
CROPS IN BAS-UELES SUB-REGION, ZAIRE, 1982

Crop	Land preparation	Planting	Weeding & crop maintenance	Harvesting & related activities	Total per ha
.....man-days per hectare.....					
Cotton	110	15	45	26	196
Corn	(105)	11	(30)	33	44
Rice	(95)	65	(28)	100	165
Peanuts	(98)	25	(17)	70	95
Cassava	162	17	45	60	286
Total	272	133	90	289	786

SOURCE: Gross revenue computed by the author.

Table 19

LABOR REMUNERATION FOR SELECTED CROPS, BAS-UELES AND LUALABA
SUB-REGIONS, ZAIRE, 1982

Crop	Land Prep.	Planting	Weeding	Harvest	Total	Gross Revenue	Return per Man-day
man-days per hectare.....				Zaires.....	
Cotton	110	15	45	26	196	450	2.30
Corn	(105)	11	(30)	33	44	1,236	28.09
Rice	(95)	65	(28)	100	165	2,024	12.27
Peanuts	(98)	25	(17)	70	95	1,960	20.63
Cassava	162	17	45	60	286	5,100	17.96
Total	272	133	90	289	786	10,770	81.25

SOURCE: Labor requirements were drawn from the INEAC Publication, Normes de la Main d'Oeuvre, and slightly adjusted by the author in the light of survey results.

This gives a definite picture of the profitability of the basic food crops grown in Zaire as compared to cotton. Note that although these different crops were found on the same field, planting and harvesting were performed at different moments.

From Table 19, it is obvious that the gross revenue is higher from cassava than from any other crop. This could be misleading. Although cassava can be grown in ten to 12 months, its harvest often extends the land-use time to 18 to 24 months--or longer; whereas, none of the other crops require more than six months. So, the farmer may harvest two or more crops of the others during the time used for one crop of cassava.

Labor Remuneration

Labor remuneration was then calculated by dividing the gross revenue (not net revenue) by the total man-days required for 1.0 hectare. Although the gross revenue is used, and not the net, this is of no great consequence. In fact, in the traditional agriculture, there are very small expenses for other inputs than labor. Therefore, the calculation of return per man-day is virtually the same as it would be using the net return.

A casual study of Table 20 reveals that the peasant farmer's reluctance to grow cotton is based on the opportunity cost principle. Although he never heard of such a principle, his common sense tells him he has more attractive alternatives than cotton. In fact, with the exception of rice, cotton is the least attractive crop. Even rice would be more attractive than cotton if the farmer had enough labor to handle the heavy labor requirements of planting and harvesting the crop.

With his limited tools and capacity for clearing more land, it was concluded that the farmer was better off intercropping than he would be

Table 20

RESULTS OF PRONAM EXPERIMENTS IN INTERCROPPING MANIOC (CASSAVA),
CORN, AND PEANUTS, PRONAM STATION, MVUAZI, BAS-ZAIRE REGION,
ZAIRE, 1983

Treatment	Manioc	Maize	Peanuts
metric tons per hectare.....		
Manioc-Maize-Peanuts	14.4	2.6	1.5
Manioc-Maize	15.1	2.9	---
Manioc-Peanuts	16.1	---	2.1
Manioc alone	15.4	---	---
Maize alone	---	3.2	---
Peanuts alone	---	---	2.5

SOURCE: Personal interview with Citoyen Lutaladio ne Bambi, Ingenieur Agronome, PRONAM, Mvuazi, 1983. Citoyen Lutaladio cautioned that yield differences were not statistically significant.

growing just cotton (mono-culture). Data supporting this conclusion are shown in Table 20, although cotton was not among the crops intercropped in this set of experiments. Programme National Manioc (PRONAM) provided data shown in Table 20. They found that manioc yielded more intercropped with peanuts than when grown alone. The research station, PRONAM, formed a definite conclusion that the farmer made a higher return from intercropping than from mono-culture.

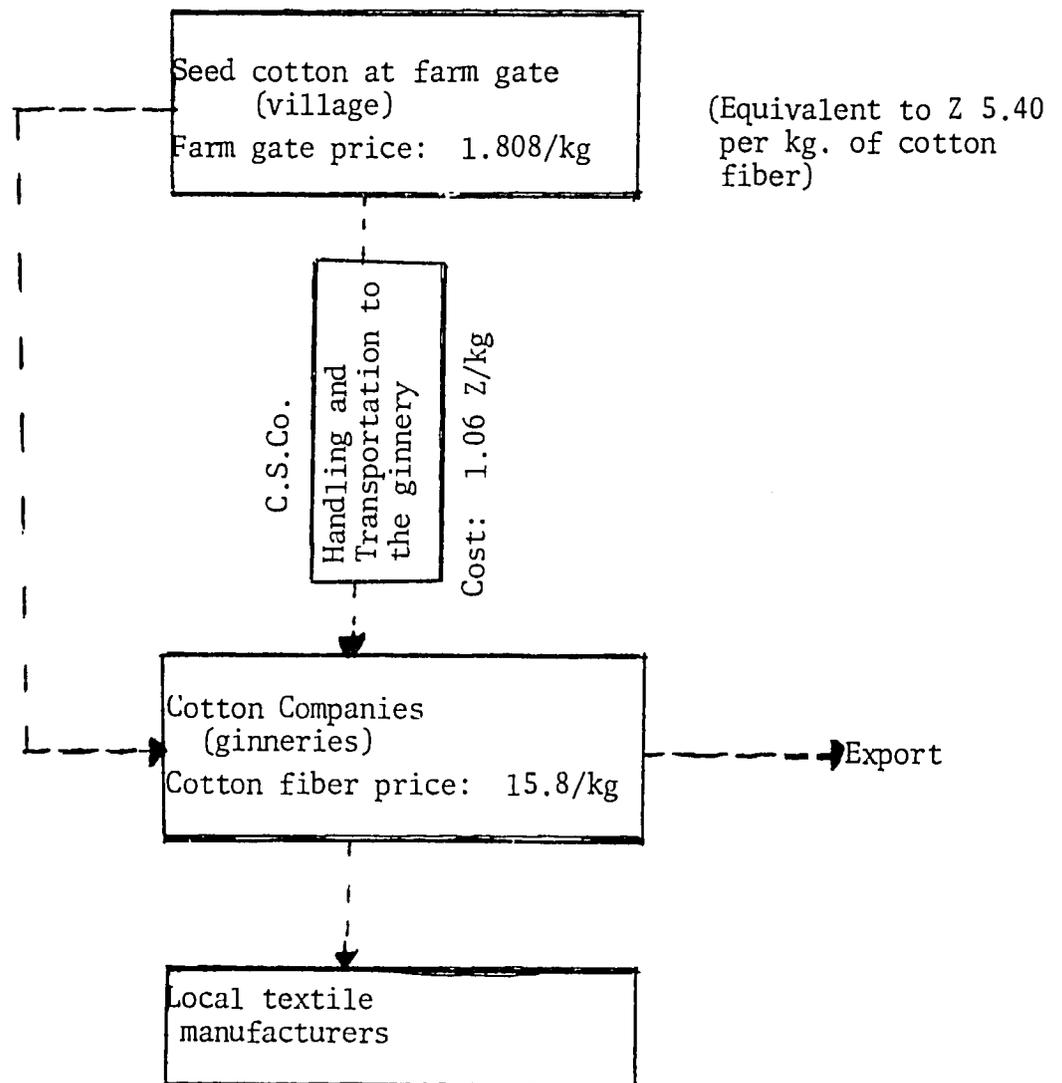
The 65 makuta boost in the price of cotton per kilogram has been a start in an attempt to match the prices farmers can get for food crops with a nearly equal input of labor. This new price, however, will still bring a farmer less than five hundred (500) Zaires for one hectare--which is far less than from any of the other crops (corn, rice, peanuts or cassava).

THE MARKETING CHANNEL

The cotton industry of Zaire is facing several problems including that of the great disparity between the price of cotton paid at the farm gate and that paid by the textile factory to the cotton companies for cotton fiber. The ginning margins, which include the cost of maintenance of the gin machinery, appear to be too high. In the U.S.A., the cotton farmer typically gets enough from the sale of cotton seed to pay for ginning, bagging and marketing his cotton. The marketing channel is shown in Figure 2.

It is widely accepted that three kilograms of unginmed cotton (seed cotton) are required to produce one kilogram of cotton fiber. Therefore, the cost in payment to the farmer for one kilogram of fiber should be three

Figure 2. MARKETING CHANNEL FOR COTTON IN ZAIRE, 1982



times that of unginmed cotton. Currently, the disparity between the farm gate price and the price of cotton fiber is so great that the cotton farmer receives a relatively small portion of the price received by the gins for cotton fiber.

It is interesting to notice that the current policy on cotton production is somehow working towards an alleviation of excessive cost of marketing. In most of the cotton producing areas, if not all, the farmer's task ends by carrying his seed cotton from the field to his home and by putting it in a temporary storage near his house. The new cotton legislation charges C.S.Co. with responsibility for costs related to transport of seed cotton to the ginneries, insurance fees, handling, storage and other small expenses. These expenses are in turn reimbursed to C.S.Co. by the cotton companies on an annual contribution basis. The C.S.Co. periodical (December 1981) reported the following figures related to these costs (Table 21) which are not inputed to the farmer's production expenditures.

With the new price of 1.80 Zaires per kilogram of seed cotton, the cost in payment to the farmer of one kilogram of cotton fiber is $1.80 \times 3 = 5.40$ Zaires. The cotton companies are paid 15.30 Zaires for the same kilogram of cotton when it leaves the gin. This means the ginneries are making about 10 Zaires profit out of each kilogram of cotton fiber sold. In view of these figures, the charge for ginning could be estimated as follows:

1 kilogram of cotton fiber:	1.80×3	=	5.40 Zaires
Transport, handling, etc.:	$1,060 \div 1,000$	=	1.06 Zaires
Ginning Costs:	$15.30 - 6.46$	=	<u>8.84 Zaires</u>
Total			15.30 Zaires

Table 21

TOTAL COST OF TRANSPORTING, INSURANCE, HANDLING AND STORAGE
OF SEED COTTON PER TON, ZAIRE, 1982

Year	1978	1979	1980	1981	1982
.....Zaires per ton.....					
Cost per ton of seed cotton	474.59	474.59	643.88	643.88	1,060.00

This allows us to get a rough estimate of the farmer's share of the gin's price for cotton fiber. For one kilogram of cotton fiber sold (15.30 Zaires), the farmer gets about 30 percent of the value.

In the United States, the costs of hauling, ginning and baling are paid by the farmer, and are included in the farm price. However, according to Knols, these costs are generally covered by the revenue the farmer receives from the sale of cotton seed (p. 360). One could not maintain that the same could or should be the case in Zaire. However, the farm price of cotton needs to be higher in order to make cotton attractive to the Zairian farmer.

One aspect of the problem in Zaire is the high cost of assembling, processing and transporting the cotton from where it is grown to the textile mills. It seems likely that some of the farms where cotton is now grown are beyond the circle where cotton buyers under a free price system would pay anything for the cotton. Marketing costs in the more distant areas absorb all of the price received for the product delivered to the mills. These areas, according to Thunen (cited by Whittaker, 1960), would revert to idle land. In Zaire, they would not revert to idle land, but to subsistence production of food crops.

According to the President of C.S.Co., that organization hopes to concentrate production of cotton in areas where the total cost of production, assembly, processing and transportation to the mill will be less. This move should enable the industry to pay the farmer a more attractive price. This move would certainly be toward agreement with Thunen's theory of the location of agricultural production.

CHAPTER V

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

SUMMARY AND CONCLUSIONS

Cotton was introduced in Zaire back in the early 1900's by slave traders from Egypt and Sudan, and by Portuguese traders from Angola. The crop grew wild in the savanna and forest regions north of the equator until Belgian colonization. Between 1917 and 1957, farmers were required to raise cotton as a means of "education." Compulsory cultivation was linked with distribution of selected seeds from government multiplication centers, an elaborate system of zoning for ginneries and a reliable marketing organization.

A quick review of the history of the agricultural sector and that of cotton production in particular revealed that there has been a decrease in both the area cultivated and the production. Cotton production reached a top level of 179,660 tons in 1959 with an estimated 800,000 families involved in the production. Between 1960 and 1964, the industry faced a lot of difficulties brought about by political disturbances. Most of the companies resumed their activities in 1965 and cotton production trend was distinctly rising until 1973 when the government decided to nationalize all enterprises. Up to 1959, the production was sufficient to cover the domestic demand for fiber and to generate a surplus that was exported.

Ten years after independence, Zaire had to begin supplementing its

production with imports from the United States, and the situation has not changed much since then. The individual farm size has decreased and so has the total output and the number of cotton farmers--currently estimated by C.S.Co. to be 350,000 farmers.

Given the country's potential for production and the need to satisfy a growing textile industry, it seemed urgent to the government to set new strategies in order to increase cotton production. The government then created the National Office for Textile Fibers (ONAFITEX) in 1971--with the monopoly rights for the marketing of cotton and its by-products. ONAFITEX was charged with the responsibility of providing technical assistance to farmers, to ensure cotton marketing through collection, transport, ginning and the sale of cotton fiber. An inefficient management led to the dissolution of ONAFITEX in 1978 and to the creation of C.S.Co. The role of the Cotton Stabilization Company, C.S.Co., in the sub-sector is strictly technical and administrative, the work in the field being left to the cotton companies. At the same time, the textile industry has been expanding as a consequence of high demand for fabrics. The capacity of the textile industry is actually in the neighborhood of 21,000 tons of cotton fiber with a total of eight major textile mills located in Kinshasa, Kisangani, Lubumbashi and Kalemie. The production of seed cotton was 29,100 tons in 1980, or an equivalent of 8,730 tons of cotton fiber. The domestic supply of cotton fiber is much less than the current capacity of the mills. Cotton fiber is, therefore, imported.

A look over the allocation of the government budget to different sectors of the economy shows that the portion of the budget directed to agriculture is relatively small. Nevertheless, the participation of the government

in various cotton projects, though small, has been encouraging for further settlement of private and semi-private cotton companies--but not thus far for the farmers.

In Zaire, agricultural prices are discussed and proposed within the Department of Agriculture and then submitted for the approval of the Department of National Economy. The new pricing policy on cotton production seems merely conjunctively oriented. In fact, it has been proposed recently to raise cotton prices from 90 makute per kilogram to 115--and even to 180 makuta per kilogram, hoping that the increase in price would make cotton production more attractive. In this study, it was found that this increase in price alone would not imply an increase in production. Increases in the cotton price have been more than offset by increases in the price of things purchased by the farmers; i.e., by inflation. On the other hand, there is a risk of making Zairian cotton a lot more expensive than imported cotton and, therefore, less competitive in the market. So, cotton pricing policies should be considered within a more global framework, the real aim being to make cotton cultivation as profitable at the farm level as competing crops.

In Zaire, the agricultural sector is still dominated with traditional practices incompatible with the needs and the requirements of society. An evaluation of the constraints to cotton production at the farm level has shown that there are the following: (1) a reliance on hand tools; (2) a lack of improved inputs; (3) a reliance on family labor; and (4) a lack of economic motivation. The heavy labor requirements combined with costs of production aggravated by a generalized inflation has resulted in a reduction of farmers' incomes. Compared to an uneducated government

employee, the cotton farmer was relatively less well remunerated.¹⁸ The higher prices proposed by the Department did not reverse the situation. However, the farmer could do much better than a low-paid government worker-- if he produced any one of several of the competing crops.

Cultural conditions were found to be favorable for cotton in the areas north and south of the equator. Soil fertility and the distribution of rainfall varied according to the distance from the equator line and the vegetative cover (either forest or savanna cover). The duration of the fallow period as well as the crop rotation varied, also, according to the natural fertility of the soil, the climate and the population density. In the populated Lualaba sub-region (southern cotton belt) the fallow period was two to four years shorter than in Bas-Ueles (northern cotton belt).

The road infrastructure is in poor condition. About 13,500 kilometers of feeder roads in the cotton producing areas need to be restored and to be kept in fairly good shape. The poor road network is not the least of the constraints of cotton production in Zaire.

In an attempt to calculate the cost of production, we found that the only inputs for which the farmers spent cash money were the hand tools. Work from family people was taken for granted, not to mention the work furnished by other farmers in the communal work scheme. It takes an average of 196 man-days to bring into cultivation one hectare of cotton in the northern cotton belt against 171 in the south. This amount of work is too heavy. The return to labor amounted to 14.7 Zaires per man-day in intercropping (cotton, corn and peanuts)--and only 5.2 Zaires per man-

¹⁸In calculating the return to labor, we have used nominal prices collected in 1981. The real prices would have been obtained by deflating the nominal prices using a consumer price index.

day in mono-culture (just cotton). This low return to labor could almost exclusively be explained by the heavy input of labor required for land preparation and by the low yields per hectare. Practices such as planting (or harvesting) cotton three to four weeks later than the correct moment, irregular weeding and thinning, irregular spacing, etc. are the factors that, we think, explain the low yields. The improvement of these practices does not cost money; it is a matter of willingness and motivation. Other factors explaining low yields (and requiring some investments) are the lack of improved inputs, especially pesticides and fertilizers, and a poor agricultural extension framework.

The survey revealed that cotton farmers (in general) had little education; this could hinder to some extent the extension efforts to introduce in the rural area the use of new improved inputs and agricultural practices. Storage conditions need to be improved in order to keep the quality of fiber high and to reduce waste.

A number of experiments with bank loans and agricultural credit have been conducted in Zaire, but they have not been very successful for several reasons. On the one hand, commercial banks and other credit institutions fear the lack of credibility on the part of the farmers; on the other hand, most of the farmers tend to confuse loans with grants. The creation of a new agricultural credit bank in January 1982 is viewed as a positive step towards the establishment of a credit system which would be flexible enough to enable small farmers to qualify for loans.

In the present study, an attempt was made to identify the constraints to the production in Zaire. Although perhaps not all of them have been revealed, this study has revealed the major ones. From it, certain policy

recommendations can be formulated.

POLICY RECOMMENDATIONS

Cotton farmers in Zaire definitely need to be motivated to increase the production. The increase in price from .90 Zaires per kilogram to 1.80 Zaires per kilogram for seed cotton recommended by the Department of Agriculture sounds reasonable on the surface--but there has been rapid inflation. The government should try to make cotton production as profitable as the cultivation of the competing food crops in order to motivate the farmers to produce it. However, there is a need to back up the increase in price by other supporting policies and strategies in order to come up with a positive result.

If a price policy is to be effective in increasing aggregate agricultural production, it must bring about a greater input of resources into agricultural production. In a traditional agriculture, the principal input which may be affected by price policy is the labor input and the principal substitution is a more profitable crop for a less profitable one--or work for leisure. In fact, more land may be brought into cultivation or withdrawn from cultivation as a result of price changes, but this occurs primarily through the use of more or less labor on improvements in the existing land--or in lesser degree, in extending the margin of cultivation. We therefore recommend actions towards an alleviation of work, especially for land preparation. This might be done more efficiently using either animal traction or, eventually, mechanizing that activity. References on cost of mechanization are available, although more detailed feasibility studies need to be performed.

It should also be recommended that small hand tools be made available to farmers at reasonable prices. This would enable more farmers to afford those primary inputs.

An effort is needed on the part of the government to protect the textile industry. We recommend that textile companies be granted the right to export parts of their final products. This would help them in the following ways:

- (1) To earn foreign exchange needed for international transactions (for instance, the buying of spare parts).
- (2) To improve the quality of the fabrics by the modernization of the machinery.
- (3) To guarantee jobs for the 10,000 people already employed by those companies and create new jobs for the jobless.
- (4) To beef up the national treasury and, in the long run, to improve the balance of payments.

The cotton industry has felt a pressing need for setting new regulations aimed at reducing the importation of used clothing, since these products are actually a serious threat to the domestic textile industry. However, this second-hand clothing is an economic boon to the poor people. An alternative solution to the problem would be the exportation of either seed cotton or cotton fiber by the cotton companies. It is quite clear that consumers will be forced to pay a bit higher prices for clothing if importation of second-hand clothing is stopped.

We also recommend that special attention be paid to the following specific points:

- (1) A substantial increase is needed in the portion of the national budget allocated to agriculture, the agriculture sector being

proclaimed the "priority of priorities."

- (2) The agricultural extension services of the Department of Agriculture should be reinforced and the officers retrained. They are the ones in direct contact with farmers and their role is essential in diffusing modern agricultural practices, as well as the use of improved inputs in the rural areas.
- (3) The experimental centers of INERA (especially Gandajika, Bambesa and Boketa) should be geared up for breeding and selection of new varieties and for experimentation with chemical fertilizers, pesticides and mechanization.
- (4) C.S.Co. needs to be regularly reimbursed by funds from the industry in order to stay on schedule with the collecting and transport of cotton from the cotton farms.
- (5) The flow of agricultural hand tools from the manufacturer in Kinshasa to the farmers in the remote countryside should be accelerated. Efficient production cannot be expected without at least a satisfactory complement of simple hand tools.
- (6) Cotton production should be concentrated in areas where the total cost of assembly, ginning and transportation will be the least. That may well be in an area or areas where production of cotton is not at the lowest cost at the farm level. However, mills have to pay for ginned cotton delivered to the mill.
- (7) Cotton prices need to be raised to reach, at least, 2.5 times the price of corn in order to make cotton production attractive to farmers. This should have little or no negative effect on corn production. Farmers would still produce corn for their own use and to sell. Corn is a rather profitable enterprise.

- (8) New investments should be made in equipment for expanding the seed cotton oil industry. This will help people involved in the production of cotton to draw additional profit from this enterprise. Both oil and cotton cake are valuable products with good demand.
- (9) Given the country's potential for agricultural production, there is a large opportunity for increasing cotton yield by an efficient job of agricultural education and extension based on practices such as correct spacing between rows and within rows, timely planting, weeding, harvesting, etc. Many such improvements require no additional cash expenditure on the part of the farmer.
- (10) We also recommend that agricultural credit institutions grant credit in kind rather than credit in cash. The improved inputs, such as fertilizers and pesticides, being exclusively imported items, it is quite obvious that not many smallholders can afford to buy sufficient amounts of these inputs. It would be easier for the creditor to get his money back from a farmer whose productivity would more than likely double or even triple by using fertilizers and pesticides.
- (11) Under the present situation, intercropping has proven to be better for farmers in terms of profitability. We, therefore, recommend that cotton, which fits well in this system, be intercropped with such other crops as appear to make the overall combination the most profitable.
- (12) We recommend the plan of the President of C.S.Co. to concentrate the production and processing of cotton in a more limited area

or areas in order to reduce the costs of assembly, processing and transportation. With more cotton produced in selected areas, it will be possible to process oil and cotton cake from cotton seed more economically, adding further to the efficiency of the move to concentrate production.

In conclusion, we recommend that both economic and agronomic research be continued on cotton. The climate and land resources of the country are too well adapted to cotton for this crop not to have a good future for Zaire. However, no great increase in cotton production should be expected until either the price is high enough, or cost of production has been lowered enough to make cotton competitive with alternative crops as a farm enterprise.

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GLOSSARY

ABBREVIATIONS

- ONAFITEX: Office National des Fibres Textiles (National Office for Textile Fibers)
- INERA: Institut National d'Etude et de Recherche Agronomique (National Institute for Agronomic Study and Research)
- IRES: Institut de Recherches Economique et Sociale (Institute for Economic and Social Research)
- FED: Fonds Europeen de Developpement (European Development Fund)
- C.S.CO.: Caisse de Stabilisation Cotonniere (Cotton Stabilization Fund)
- IDA: International Development Association
- COCE: Caisse Central de Cooperation Economique (Central Fund for Economic Cooperation)
- SOFIDE: Societe Financiere de Developpement (Financial Development Company)

WEIGHTS AND MEASURES

- 1 hectare (ha) = 2.471 acres
- 1 hectare (ha) = 100 acres = 10,000 square meters
- 1 kilometer (km) = 0.621 mile
- 1 meter (m) = 3.28 feet
- 1 kilogram (kg) = 2.204 pounds