THE DEVELOPMENT OF AGRICULTURE IN ETHIOPIA FOLLOWING THE 1975 LAND REFORM

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INTRODUCTION

Ethiopia is primarily an agricultural country. It is believed to possess an immense potential for agricultural production, a potential which has not yet been realized. Out of the total land area of 1.22 million km2, some 71 per cent is estimated to be suitable for agriculture. However, only 19 per cent of the land is at some time used for crop production (NRDC/CPSC 1983; MSFD 1984). This apparently low rate of utilization is due in large part to endemic problems of malaria, sleeping sickness, etc, in the lowland areas. About 40 per cent of the total geographical area is classified as highlands and about 88 per cent of the national farming population live in these highland areas. Prior to 1975, the agrarian economy in Ethiopia was feudal. During the feudal era an agricultural surplus was extracted from low-productivity agriculture by a relatively small group of landlords. It is generally believed that the system kept the peasantry impoverished and preserved outmoded primitive cultivation practices. Insecurity of individual tenure under the feudal system also reduced the incentives for tenants to increase yields through fixed capital investment in the improvement of land. The overall effect of these tenure arrangements was reflected in the stagnation of agriculture. This perceived bottleneck was removed by the proclamation of March 4, 1975 which made all rural lands public property and thereby fundamentally altered agrarian relations in Ethiopia (PMAC 1975). Since 1975, through a series of related proclamations, the government has sought to organize agriculture into production units of individual farms (each of at most 10 ha), state farms (mainly comprising former estates, plantations, and large commercial farms), and producer's cooperatives.

Private farm households were organized into Peasant Associations[1] (PAs). The total number of PAs, according to recent figures available from the Ministry of Agriculture (MOA) is 20,158 with a total membership of about 5.6 million peasant households (MOA 1985b). As at the end of 1985, there were 1856 Producers'

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1 Since 1975, the rural areas are organized into peasant associations below the woreda (sub-district) level. The woreda is the lowest unit of administration which is demarcated territorially. Within a woreda the peasant families are organized into associations largely on the basis of the number of families and the area under cultivation. A peasant association is organized for every 300 to 400 families on 800 ha of land. In a PA, farm households cultivate land individually.

Cooperatives[2] (PCs), of which only 191 were registered and had legal status. These cooperatives accounted for a total of 132,842 farm households (MOA 1985a). At that same time there were 54 state farms owned and operated by the state.

In spite of all these major changes to the structure of agriculture in the country, production has stagnated. The present performance of agriculture neither realises its potential nor does it meet the country's needs for food.

Currently, Ethiopia is experiencing a very wide food gap. Agricultural production is increasing annually by about 1.8 per cent while population growth is approximately three per cent (World Bank 1984). Although recent data are not available, per caput consumption of cereals and pulses has been falling steadily from 415 gms per caput per day in 1975/76 to 367 gms in 1981/82 (FAO 1982). Ethiopia has now become a regular importer of some 300 to 400 thousand metric tons of food grain each year. Imports of food increased from US $11.2m in 1974 to US $62.3m in 1982 (NBE 1982). The total volume of food aid flowing into the country increased from 135,000 MT in 1978 to 243,000 MT in 1982 (FAO 1982). The increase in food aid is even more striking if one considers the case of 1984 and 1985 when international food assistance reached 1.1. million MT of grain (RRC 1985).

The basic constraint on development in Ethiopia is that agriculture presently produces little economic surplus. Yet, it is the agricultural sector that can provide investable resources for national development. Agriculture should finance its own growth and also finance industrialization of the country. The problem, therefore, is how to achieve development and growth in agriculture. An appreciation of the general course of agricultural development in Ethiopia since the 1975 land reform may provide some insights to decision makers in Ethiopia. This is attempted in the remainder of this paper.

First, the role of agriculture in Ethiopia's economic development is briefly described. Agriculture and its performance since 1975 are then examined. The major characteristics of agricultural policy in Ethiopia are investigated and their implications for the development of agriculture are reviewed. Finally, the main points of the paper are summarized and suggestions are offered regarding the future development of agriculture.

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2 Peasants with small holdings within a PA are being organized into cooperatives. These peasants cultivate the land collectively.

Role of Agriculture in Ethiopia's Economic Development Strategy

Agriculture can directly contribute to Ethiopia's economic development in six important ways. These are:

1. By providing basic food supplies for the nation;

2. By generating foreign exchange earnings through agricultural exports;

3. By supplying labour needed by the industrial sector;

4. By providing the necessary capital for industrial development and social investment;

5. By raising the income of the rural population and thereby being an important source of effective demand; and

6. By providing employment for a significant part of the rural population.

Although there exist statistical hurdles in quantifying the roles agriculture has played in the period since 1970/71, the overall picture is clear from the data in Table 1. From these data it can be seen that agriculture's share of GDP, at around 50 per cent (80 per cent from crop and 20 per cent from livestock) has not changed significantly from 1970/71 to 1985/86. The industrial, domestic trade and other services sectors account for about 15 per cent, 15 per cent and 20 per cent of GDP respectively. The data also show that agriculture made an almost equal contribution to the GDP of the country both during the pre- and post-1975 period. The development of the non-agricultural sectors has not significantly reduced the overwhelming domination of the economy by the agricultural sector. It seems certain that the economic development of Ethiopia will inevitably depend primarily on agriculture for many decades to come.

Agriculture's contribution is also notable in the earnings of foreign exchange needed for modernization of the country. Over the ten-year period 1975/76-1984/85, these export earnings largely originated in agriculture. Table 2 shows that agriculture's share in the total value of exports was close to 90 per cent over the period 1975/76 to 1984/85. The value of coffee exports has generally increased. However, the value of exports of pulses and oil seeds has tended to decline. Exports of livestock and their products and other industrial crops have not grown importantly.

Agriculture and Its Performance

As regards the productivity of agriculture, the relative importance of the three types of production units - individual farms, state farms and cooperatives - between the years 1975/76 and 1985/86 are shown in Table 3. Peasant farms are still the dominant economic force in the country. These utilize, on the average about 95 per cent of available land farmed and produced over 96 per cent of the national agricultural output. For the same period, state farms accounted for 3.2 per cent of the total cultivated area and contributed about 2.8 per cent of the national crop. The PCs accounted for roughly 1.8 per cent of land in agricultural use and contributed about 1.2 per cent of the total national crop production.

Cereals dominate national crop production, accounting for over 80 per cent of the area sown (Tables 4 and 5). Pulses and oilseeds account for all but a minor percentage of the remainder of the cropping.

The annual compound growth rate of area, production and productivity for the period 1975/76 to 1985/86 was estimated using exponential function of the form $y = ae^{bt}$.

The results are summarized in Tables 6, 7 and 8. As shown in Table 6, the production of cereals increased by an average of 1.91 per cent per annum, whereas the annual growth rate in area sown was 0.88 per cent. Similarly, the production of pulses and oilseeds increased by 1.67 per cent and 6.74 per cent respectively while their growth rate in area was 1.26 per cent and 3.36 per cent per annum respectively. The compound growth rates in area and production were highest for oilseeds due to the establishment of state farms and the formation of PCs since these two sectors have given special emphasis to the production of exportable crops such as oilseeds. Overall, there has been only an insignificant expansion in area and production of food crops.

Table 7 shows that yields per hectare of most crops at the national level have shown a declining trend. The national level yield data were disaggregated to assess the annual change in yields per hectare at the sector level. The results are presented in Table 8. As shown in that Table, positive changes in yields were mainly in the peasant farming sector. Yields in both the PC and state farm sectors were, in most cases reducing over the period from 1975/76 to 1985/86. Taken together Tables 6, 7 and 8 show that the relatively insignificant growth in cereal and pulse production in Ethiopia over the decade

was not only due to no expansion of the cultivated area, but also to declines in yield, particularly in the state-owned and operated agricultural sectors. More importantly, the annual growth rates of cereal and pulse production - both estimated to be less than 2 per cent - is less than the current annual population growth rate of three per cent. For reasons of national food security and development, it is vital to determine why total crop production has not significantly increased over the period of the last 11 years when, supposedly, the problem of tenure insecurity was solved by land reform and improved technologies had been extended to farmers. This critical issue is dealt with to a limited extent in the latter part of this paper.

Some discussion of livestock production is necessary to give a more complete picture of Ethiopian agriculture. Livestock play an important role in Ethiopian farming in supplying animal power for cultivation, especially in highland areas. In the highlands, small-scale farmers keep livestock as a form of insurance against crop failure, as a form of savings or emergency use, for breeding draught animals for cropping, to supply transport services, to supply manure for fuel, and as a source of meat and milk (FAO 1983; GOE/AACM 1984). The national herds and flocks are mainly kept in the highlands where disease challenges to stock are less than the hotter low land areas. Livestock are privately owned and the markets for stock, meat and other animal products are not subject to significant government intervention. Livestock have been and still are the single most important capital asset of rural people. The Ethiopian highlands are stocked at an average of 35 Tropical Livestock Units (TLU) per km^2 - higher than any other area of comparable size in the continent. Ethiopia has the largest livestock population in Africa (FAO 1984). The estimate of livestock population in Ethiopia are shown in Table 9. Despite the impressive size of the Ethiopian livestock population, their productivity is low (Table 10). There are several reasons for this.

Firstly, the number of livestock in Ethiopia is not in balance with the available feed resources. Overstocking - associated with consequent land degradation - is widespread in the highland areas.

Secondly, although the highlands are largely free of trypanosomiasis and other important diseases mainly occurring in the lowlands, stock in the highlands are affected by many other diseases causing morbidity and mortality.

Thirdly, the livestock marketing system is poorly developed. The main livestock production and surplus areas are located far from the main local meat-consuming and/or exporting centres. The transport of animals over these long distances is largely by

trekking. Animals are driven for days without proper feed, water and rest causing significant bodyweight losses. In the traditional husbandry systems, drought oxen are given priority in feeding so stock which are traded or sold are seldom specially fattened prior to disposal. Nevertheless, livestock sales are the major source of cash income in the largely subsistence farming areas. Finally, improved livestock breeds have had little impact nationally and they are mainly in the small-scale commercial dairy sector (Tegene and Tenassie 1983).

Major Characteristics of Agricultural Policy

The central importance of agriculture to the nation is stressed in the national development plan of Ethiopia (NRDC/CPSC 1983). The plan has acknowledged the need to increase and diversify agricultural output, to achieve self-sufficiency in food supply, and to raise rural incomes and living standards. However, in practice none of the above has been achieved.

Investment in Agriculture

Viewed over time, perhaps the most notable aspect of public investment in agriculture is that its post-1975 share is greater than its pre-1975 share (Table 11). The socialist Government formulated its first ten-year (1984 to 1994) long-term plan in 1980/81. According to this plan agriculture will receive 22.1 per cent of the total national investment. Out of the total agricultural budget, 10.8 per cent is for peasant farming, 6.1 per cent for state farms, 22.4 per cent for settlement farms, 38.6 per cent for irrigation farming on state farms, 9.8 per cent for export crops, 4.2 per cent for forestry, 7.8 per cent for livestock and 0.3 per cent for fisheries.

The most striking point, however is the large absolute and relative size of investment envisaged for the irrigation and settlement sub-sectors. These two sub-sectors together constitute 61 per cent of the total investment planned for agriculture and over 13 per cent of total planned investment. Settlement farms are also state-owned farms. Irrigation farming is exclusively on state farms. By contrast, peasant farming is to receive only 11 per cent of the total investment planned for agriculture and 2 per cent of the total planned investment. This underscores the lack of appreciation of the strategic role of smallholders in the development of Ethiopian agriculture. Furthermore, the apportioning of this investment between the peasant and cooperative peasant farming is not clear. It is likely that despite their poor performance to date, the emphasis will continue to be on the state farms, producers' cooperatives and settlement farms. This will result in

Excessive emphasis on the two state agricultural sectors and hence neglect of the peasant sector has resulted in low farm input consumption by this latter sector. Smallholders' incentive for producing more are also dampened by the large scale intervention of the State in food grain marketing. This intervention compounds the difficulties of marketing in a nation with limited road, transport and storage facilities.

Other Constraints to the Development of Ethiopian Agriculture

Regarding production technology, the evidence available from Shibbru (1975), ARDU (1980), and AAU (1980), confirms the view that improved and appropriate technology is not available at the farm level.

The shortage of agro-meteorological services and information in the country also suggests that the problem associated with climatic variation in a country like Ethiopia where smallholder agriculture depends entirely on rainfall, are overlooked.

The large gap between crop yields on research plots and on farmers' fields indicates that the research results are either beyond the small farmers' reach or they are not passed on to the farmers in a proper way (Table 15). The complex geography of Ethiopia and important local differences in climate, soils, etc., make it most difficult to overcome these gaps unless the funding of agricultural research is dramatically increased.

In addition to the above, the country has also encountered several environmental constraints among which the most important ones are erosion due to inadequate water and soil conservation programmes, high human livestock population pressures on agricultural land, repeated occurrence of drought and peasant destabilization due to manmade and natural disasters.

underinvestment in the peasant sector, the sector which has, despite limited state support since 1975, provided the only productivity gains observed in the agricultural economy of Ethiopia.

Over more than two decades a number of projects have been established to supply farm inputs (e.g., fertilizer and improved seed), to provide short-term credit for the purchase of inputs and to give agricultural extension services to smallholders. Nonetheless, the domestic allocation of capital outlays for these "package" programs was generally inadequate and most of them were dependent on external funds for their operation. Agriculture, besides providing food and employment to the people and raw materials to industries, also supplies about 90 per cent of the total export commodities. Despite this fact the allocation of foreign exchange for the purchase of agricultural equipment and imported farm inputs was between 2.3 per cent and 10.16 per cent over the period 1971/72 to 1980/81 (NRDC/CPSC 1982b). Also, when viewed in the light of the fact that the agricultural sector contributes more than 50 per cent of GDP and accounts for 85 per cent of employment, the resources allocated to agricultural research appears to be inadequate. In 1982/83, for instance, only about 0.4 per cent of the 1981/82 GDP was allocated to agricultural research.

Incentives to Producers

Farmers growing crops for sale have responded to the failure of the government to provide them with proper incentives (prices) by retreating further to the subsistence mode. Virtually all the government farm gate prices (obligatory quota selling prices) for the private sector for most crops have lagged well behind the local free market prices. The agricultural terms of trade deteriorated as producer prices remained fixed relative to the prices of major agricultural inputs, particularly of fertilizer. At current official prices smallholders do not cover their cost of production for some crops.

The pattern of distribution of fertilizer, improved seed and agricultural credit has also disadvantaged smallholder farmers. As may be seen from Tables 12, 13 and 14, state farms (which for example in 1980/81 contributed less than 5 per cent to national crop production and constituted less than 5 per cent of the total area cultivated) used 52 per cent of the fertilizer, 79 per cent of improved seed and 91 per cent of agricultural credit available nationally. In the same year, the peasant sector which cultivated 95 per cent of the area and contributed 94 per cent of the national harvest used 43, 16 and 9 per cent of fertilizer, improved seed and credit respectively which were available.

Conclusions

Ethiopian agricultural development has been severely constrained by the application of inappropriate agricultural policies and the dearth of investment in the smallholder sector which dominates the national economy. Low productivity and poorly structured markets for agricultural inputs and outputs have also contributed to the poor performance of the agricultural sector since 1974/75.

The often desperate food situation in the country has not improved significantly since then. Poor growth in production can be attributed to various factors, the most important of which are: the quantitative and qualitative deficiencies of research, extension and support institutions efforts, and the favouring of large-scale and capital-intensive state-owned farming enterprises with scarce credit, and other modern inputs and skilled labour to the relative neglect and generally to the detriment of smallholders.

The 1975 land reform did ensure access to land to the country's 5.6 million smallholder farmers. However, a successful land reform would have taken better account of the economic, technological and social factors involved.

To bring sustained economic growth to the rural areas, balanced supply of these and other associated factors are needed.

The so-called socialist agriculture has not yet resulted in the cooperatives and state farms using more than five per cent of the total cultivated land or producing more than four per cent of the total agricultural production although, together, they have accounted for more than 60 per cent of the agricultural investment, 91 per cent of agricultural credit, 79 per cent of improved seed allocation and 52 per cent of fertilizer used in the 1975/76 to 1985/86 period.

Objective conditions must be taken into account when moving from redistribution to collectivization in a country where subsistence production accompanied by a low level of technology continues to dominate the agricultural sector. The drive towards collectivization should neither underestimate nor ignore the important economic role that could and should be played by the small-scale farmers who presently account for 96 per cent of the total agricultural production. Greater attention to the strengthening of small-scale farmers is warranted, indeed essential, in order to increase agricultural production and to promote rural development in Ethiopia.

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Table 1

GDP of Ethiopia by Industrial Origin for the Period 1970/71 to 1985/86

Year	GDP (m birr)	Agriculture share of total GDP (%)	Agriculture growth rate (%)	Share of other sectors		
				Industry (%)	Trade (%)	Services (%)
1970/71	2405	54.5	3.4	15.2	13.6	16.7
1971/72	2286	51.8	-4.9	16.0	14.4	17.8
1972/73	2345	50.3	2.6	16.4	15.1	18.2
1973/74	2605	49.3	11.1	16.1	15.6	19.0
1974/75	2423	48.3	-7.0	15.8	15.6	20.3
1975/76	2739	48.5	13.0	14.8	16.1	20.6
1976/77	3198	48.2	16.8	14.9	15.4	21.5
1977/78	3467	47.6	8.4	14.5	14.8	23.1
1978/79	3656	46.7	5.5	15.5	15.2	22.6
1979/80	3871	46.3	5.9	16.2	15.1	22.4
1980/81	4024	46.0	4.0	16.0	15.5	22.5
1981/82	4035	45.7	0.3	16.0	15.7	22.6
1982/83	4281	48.5	6.1	15.5	16.0	20.0
1983/84	3793	45.6	-11.4	17.3	16.4	20.7
1984/85	3177	41.3	-16.3	18.5	17.5	22.7
1985/86	3860	44.7	21.5	17.3	16.5	21.5
Average	3260	48.2	3.69	15.9	15.4	20.5

Source: CSO, Statistical Abstract 1969/70-1985/86.

Table 2

Value of Ethiopia's Exports of Major Commodities - 1975/76 to 1984/85

Year	Total value of exports (m. birr)	Non-agri-cultural as % of total	Agri-cultural as % of total	Major agricultural export items as % of agricultural exports				
				Coffee	Oil-Seed	Pulses	Livestock	Others
1975/76	540.00	9	91	60.5	8.7	10.7	16.4	3.7
1976/77	646.00	9	91	69.5	6.7	8.0	10.3	5.5
1977/78	670.70	6	94	81.7	2.6	5.0	10.0	0.7
1978/79	744.65	7	93	78.0	2.7	2.6	16.0	0.7
1979/80	984.80	13	87	73.5	2.2	3.0	17.7	3.6
1980/81	852.30	14	86	71.0	5.0	3.0	14.8	6.2
1981/82	789.40	14	86	71.0	3.6	4.5	16.5	4.4
1982/83	910.50	15	85	72.5	3.3	4.0	15.0	5.2
1983/84	930.10	14	86	74.0	5.6	2.6	14.0	3.8
1984/85	796.00	15	85	65.0	4.1	2.7	22.0	5.7

Source: FAO (1984); Ministry of Foreign Trade (1984).

Table 3

Relative Importance (pe cent of area and output nationally) of the Three Types of Production Units with respect to Major Groups of Crops[a] - 1975/76 to 1985/86

Period	Peasant Farms		Producers' Cooperatives		State Farms	
	Area (%)	Output (%)	Area (%)	Output (%)	Area (%)	Output (%)
1975/76	98.4	98.0	1.1	0.8	0.5	1.2
1976/77	98.8	98.8	0.9	0.5	0.3	0.7
1977/78	98.7	98.0	0.8	0.7	0.5	1.3
1978/79	98.6	97.5	0.8	0.7	0.6	1.8
1979/80	96.1	96.3	2.2	1.5	1.7	2.2
1980/81	95.4	95.3	1.4	1.0	3.2	3.7
1981/82	94.8	94.5	2.0	1.2	3.2	4.3
1982/83	95.2	94.4	1.8	1.2	3.0	4.4
1983/84	94.4	95.1	3.4	1.9	2.2	3.0
1984/85	94.3	94.3	3.2	1.7	2.5	4.0
1985/86	94.7	91.8	1.9	1.5	3.4	6.7

[a] Includes cereals, pulses and oilseeds.

Source: FAO/LUPRD (1982); NRDC/CPSC (1982); CSO (1985); MSFD (1985); MOA (1985).

Table 4

National Esitmates of Area under Major Crops for the Peasant, Producers' Cooperative and State Farm Sectors 1975/76 to 1985/86 ('000 ha)

Year	Cereals		Pulses		Oilseeds		Total
1975/76	4480	(81.9)	647	(11.8)	344	(6.3)	5471
1976/77	4264	(83.2)	670	(13.1)	189	(3.7)	5123
1977/78	4496	(85.0)	627	(11.9)	165	(3.1)	5288
1978/79	4682	(85.2)	647	(11.8)	167	(3.0)	5496
1979/80	5225	(83.0)	857	(13.6)	212	(3.4)	6294
1980/81	4919	(82.8)	755	(12.7)	270	(4.5)	5944
1981/82	5296	(83.2)	812	(12.7)	258	(4.1)	5961
1982/83	5297	(82.9)	811	(12.7)	282	(4.4)	6390
1983/84	5011	(82.6)	773	(12.7)	285	(4.7)	6069
1984/85	4451	(85.5)	649	(12.5)	266	(2.0)	5365
1985/86	4674	(85.0	714	(9.4)	308	(5.6)	5696

Note: Figures in parentheses represent percentage of the total cultivated area.

Source: FAO/LUPRD (1982); NRDC/CPSC (1982); CSO (1985); MSFD (1985); MOA (1986).

Table 5

National Esitmates of Area under Major Crops for the Peasant, Producers' Cooperative and State Farm Sectors 1975/76 to 1985/86 ('000 MT)

Year	Cereals		Pulses		Oilseeds	
1975/76	4803	(86.6)	624	(11.3)	116	(2.1)
1976/77	4427	(86.68)	627	(12.3)	48	(0.9)
1977/78	4072	(87.6)	518	(11.2)	57	(1.2)
1978/79	4192	(88.9)	472	(10.0)	52	(1.1)
1979/80	6662	(85.8)	1021	(13.2)	81	(1.0)
1980/81	5914	(86.0)	855	(12.4)	108	(1.6)
1981/82	5735	(86.2)	831	(12.5)	85	(1.3)
1982/83	7149	(86.8)	883	(11.9)	124	(1.5)
1983/84	5835	(87.6)	726	(10.9)	101	(1.5)
1984/85	4903	(86.7)	664	(11.7)	91	(1.6)
1985/86	4521	(86.6)	545	(10.5)	152	(2.9)

Note: Figures in parentheses represent percentage of the total output tonnage.

Source: FAO/LUPRD (1982); NRDC/CPSC (1982); CSO (1985); MSFD (1985); MOA (1986).

Table 6

Estimated Annual Compound Rates of Growth of Area and Production under Cereals, Pulses and Oilseeds in Ethiopia 1975/76 to 1985/86

Crop Type	Annual growth rate (%)			
	Area		Output	
Cereals	0.88	(1.23)	1.91	(1.06)
Pulses	1.26	(1.22)	1.67	(0.66)
Oilseeds	3.36	(1.50)*	6.74	(2.24)**

Note: Figures in parentheses are t values.
** Significant at five per cent level.
* Significant at ten per cent level.

Table 7

Estimated Annual Compound Growth Rates of Per Hectare Yields of Major Crops Grown in Ethiopia 1975/76 to 1985/86

Crop	Growth rates (%)	t-ratio
Cereals:	-2.18	-2.08**
Barley	2.76	1.62*
Wheat	-0.77	-0.86
Maize	1.04	0.68
Sorghum	-3.35	-2.22**
Millet	-1.30	-0.84
Pulses:		
Horsebeans	-0.02	-0.01
Chick peas	-3.75	-1.90*
Harricot beans	0.71	0.40
Field peas	-0.30	-0.14
Lentils	0.02	0.11
Oilseeds:		
Niggerseed	1.47	0.90
Linseed	3.72	2.79***

*** Significant at one per cent level.
** Significant at five per cent level.
* Significant at ten per cent level.

Table 8

Comparison of Estimated Annual-Compound Growth Rates of Per Hectare Yields of Crops among the Three Sectors of Production - 1975/76 to 1985/86

Crop	Peasant Sector		Producers' Cooperative Sector		State Farm Sector	
Cereals:						
Teff	2.22	(2.97)***	-1.62	(-0.69)	-8.57	(-3.53)***
Barley	5.07	(2.88)***	3.17	(1.06)	1.31	(0.78)
Wheat	2.75	(1.94)**	-3.05	(-0.98)	-0.75	(-0.46)
Maize	2.20	(0.88)	6.79	(2.14)**	-1.61	(-1.23)
Sorghum	2.43	(1.43)*	0.75	(0.41)	-12.30	(-4.52)***
Millet	0.42	(0.46)	-4.80	(-1.22)	-	
Pulses:						
Horse beans	3.56	(1.88)**	-6.12	(-2.02)**		
Chick peas	4.65	(3.65)***	-8.98	(-2.76)**	-14.60	(-2.31)**
Harricot beans	0.56	(0.19)	4.04	(1.50)*	-24.60	(-0.61)
Field peas	3.86	(1.95)**	-6.02	(-1.44*)	-	
Lentils	11.50	(0.48)	-1.21	(-0.47)	-	
Oilseeds:						
Linseed	5.28	(2.79)***	2.48	(0.86)	-	
Niggerseed	0.65	(0.42)	2.24	(0.77)	-	

Note: Figures in parentheses are t values.
*** Significant at one per cent level.
** Significant at five per cent level.
* Significant at ten per cent level.

Table 9

Estimated Livestock Population in Ethiopia and the Proportion Resident in the Highlands, 1982

Type of Livestock	Number (million head)	Proportion in the highlands (%)
Cattle	27	80
Sheep	24	83
Goats	18	73
Equines	7	76
Camels	1	0
Poultry	53	90

Source: FAO (1984, p. 157; 1984, p. 3).

Table 10

Livestock Yields in Ethiopia and in Africa in 1980 (kg/head/year)

Type of Livestock	Ethiopia		Tropical Africa	
	Meat	Milk	Meat	Milk
Cattle	8	26	13	29
Sheep	3	N.A.	4	7
Goats	3	N.A.	4	7

N.A.: Signifies no estimate available. Sheep are only rarely milked in Ethiopia.

Source: FAO (1984, p. 164).

Table 11

Pre- and Post-1975 Percentages of Capital Expenditure Allocated to Agriculture, in Comparison to Other Sectors 1969/70 to 1982/83

Year	Capital expenditure (%)
Pre-1975	
1969/70	13
1970/71	16
1971/72	22
1972/73	21
1973/74	22
1974/75	23
Post-1975	
1975/76	30
1976/77	41
1977/78	44
1978/79	49
1979/80	31
1980/81	28
1981/82	24
1982/83	19

Source: Compiled from Ethiopian Central Statistics Office, Statistical Abstracts, 1969/70 through 1982/83.

Table 1[illegible]

Fertiliser Use by the Different Agricultural Sectors in Ethiopia - 1977/78 to 1982/83 ('000 MT)

Agricultural sectors	1977/78	78/79	79/80	80/81	81/82	82/83
State Farms	-	10.51 (23.4)	23.45 (34.0)	35.53 (52.4)	38.27 (55.0)	33.98 (39.2)
Settlement Farms	0.13 (0.4)	0.82 (1.8)	4.19 (6.1)	2.90 (4.3)	1.12 (1.6)	4.56 (5.3)
Peasant Farms	31.90 (99.6)	33.54 (74.8)	41.24 (59.9)	29.28 (43.2)	29.13 (41.8)	45.94 (53.0)
Producers' Cooperatives	-	-	-	0.16 (0.1)	1.13 (1.6)	2.16 (2.5)
Total ('000 MT)	32.03	44.86	68.88	67.90	69.64	86.64

Note: Figures in parentheses indicate percentage share of each sector in each year.
Source: NRDC/CPSC (1982a).

Table 13

Use of Improved Seed by the Different Agricultural Sectors in Ethiopia - 1977/78 to 1984/85

('000 MT)

Agricultural sectors	1977/78	78/79	79/80	80/81	81/82	82/83	83/84	84/85
State Farms	2.05 (35)	2.41 (45)	6.36 (65)	15.65 (79)	17.6 (80)	17.6 (67)	5.8 (75)	1.6 (20)
Settlement	0.43 (7)	0.59 (11)	0.79 (8)	0.83 (4)	0.90 (4)	1.0 (4)	1.8 (23)	5.89 (74)
Peasant Farms	3.40 (58)	2.32 (44)	2.68 (27)	3.26 (16)	3.17 (14)	7.08 (26)	0.17 (2)	- -
Producers' Cooperatives	-	-	-	0.12 (1)	0.35 (2)	0.65 (3)	-	1.9 (14)
Total ('000 MT)	5.88	5.32	9.83	19.86	22.04	26.35	7.84	13.4

Note: Figures in parentheses indicate percentage share of each sector.

Source: CSC (1985).

Table 14

Agricultural and Industrial Development Bank

Agricultural Credit Disbursement to Peasant and State Sectors

1975/76 to 1982/83

Year	Total disbursement ('000 birr)	Percentage share of state farm sector (%)	Percentage share of peasant sector (%)
1975/76	77,119	88	12
1976/77	86,921	82	18
1977/78	130,403	90	10
1978/79	77,820	77	23
1979/80	197,541	85	15
1980/81	371,064	91	9
1981/82	248,180	86	14
1982/83	134,003	79	21
Average	165,381	85	15

Source: AIDAB (1984) and Annual Reports 1975/76 through 1982/83.

Table 15

Yield Levels Achieved at Research Stations, in Field Trials and in the Three Sectors of Agriculture (t/ha)[a]

Crop	Research stations	Field trials	Peasant sector	Cooperative sector	State farm sector
Teff	2.4	1.8	0.8	0.7	0.6
Barley	5.5	4.0	1.1	1.1	1.8
Wheat	5.3	3.2	1.1	1.2	1.5
Maize	9.0	5.0	1.5	1.1	2.7
Sorghum	5.0	3.0	1.2	1.1	1.3
Horse beans	2.0	1.5	1.2	0.8	-
Harricot	2.5	1.8	0.8	0.7	0.6
Field peas	1.3	1.0	0.7	0.6	-
Linseed	1.3	-	0.4	0.3	-

a Involves use of improved seed in all but smallholder yields.

Source: IAR (1979); MOA (1979).