

## CHAPTER 2

# DEVELOPMENT STRATEGIES AND THE PRODUCTIVITY OF SMALLHOLDER AGRICULTURE IN ETHIOPIA

### 2.1 Introduction

Government policies and strategies either encourage or discourage economic growth and hence development. Sound and prudent policies serve as a tool for development. On the contrary, ill-conceived and inflexible government policies generally lead to underdevelopment, which eventually lead to poverty. Macroeconomic and sectoral policies were among those affecting agricultural development in Ethiopia during the past regimes, coupled with recurrent droughts and other natural calamities. The said economic policies were inconsistent with the country's social and economic conditions. Allocation of productive manpower and other resources as well as the bulk of government budget were focused on the industrial and services sectors, neglecting the dominant agricultural sector (MEDaC, 1999).

An agricultural development strategy can generally be evaluated by its ability to promote overall economic growth, the capacity to bring about structural transformation and its positive interaction with the other economic sectors. Moreover, such a strategy is evaluated in terms of the measures designed to achieve broadly based improvement for the vast majority of the rural communities and by the capacity to bring about a favorable impact on attitudes and behavior of the rural population. Agricultural growth encompasses more than the provision of increased food supplies and raw materials. Increased rural demand for inputs and consumer goods can provide an important stimulus to domestic industry that is likely to promote the growth of local manufacturing and stimulate the peasant farmers to increase production.

Developing countries are faced with the challenge of devising agricultural development strategies that will help improve the lives of the rural communities and that promote overall economic development. Moreover, because farming is generally confronted with many risks, unless there are deliberate efforts to encourage its development, its productivity would decline from time to time. The constant challenge of weather, drought or floods, unstable market conditions, falling product prices, increasing prices of agricultural inputs, and threat of

diseases and pests are only a few of the risk factors with which farmers must contend. Appropriate agricultural policies could help in reducing some of these uncertainties.

The agricultural sector being the basic source of food and raw material supply, engaging more than four-fifths of the population, contributing about half of the GDP and 90 percent of foreign exchange earnings, compels inescapable emphasis in any analysis of Ethiopia's socio-economic development. As a result, the performance of the overall economy depends very much on the progress made in this sector. The agricultural sector is not only an important branch because it is the main stay of the population, but also because a significant proportion of the economic surplus of the nation emanates from it. Thus development efforts in Ethiopia should primarily focus on developing the agricultural sector.

The development of the agricultural sector is reflected by its capacity to supply adequate amount of food for the population and raw materials for the industries; by its potentials to generate adequate foreign exchange; and by its capacity to provide market for industrial output. Judged on the basis of these criteria, the development of the sector has been unsatisfactory and it has not been able to generate surplus production to meet the growing demand for agricultural products. The country had no better alternative than to give top priority to the development of the agricultural sector since it is the dominant economic sector (Assefa, 1995).

The bulk of agricultural production comes from smallholders who cultivate small, scattered and fragmented plots. They are primarily subsistence farmers, employing mainly backward cultivation methods using very little or no improved farm inputs. Smallholders in Ethiopia also lack the necessary skill for management, are constrained by lack of transportation and storage facilities, and are victims of inappropriate, biased and inconsistent government policies on marketing, pricing, credit, taxation, and land tenure systems. Consequently the productivity of these farmers remained very low (Mulat, 1999; Assefa, 1995).

The poor performance of the agricultural sector has been attributed to several factors. The feudalistic land ownership system has often been cited as the major obstacle that hindered the development of the agricultural sector in feudalistic Ethiopia. This problem was solved when the land reform proclamation came into effect in 1975. Nevertheless, land reform is a

necessary but not a sufficient condition for raising output levels and hence the expectations have not been met. Other necessary measures that promote agricultural development ought to have accompanied the land reform. Agricultural development policies pursued by the government could enhance or curtail the development momentum and in the absence of sound agricultural policies land reform alone will not bring about increased agricultural production and productivity.

The purpose of this chapter is to give a brief account of the agricultural development policies and strategies pursued in the country and their impact on the productivity of smallholder farmers. Particular emphasis is given to agricultural technology, policies, institutions, and the underlying constraints hindering the growth of agriculture. Two distinct time periods are identified to analyze the distinct policies and strategies adopted in the country over the last two and half decades. These are the **socialist period** (1975-1990) and the **current period** (after 1991).

## **2.2 Development Strategies During the Socialist Period (1975-1990)**

### **2.2.1 Socialist Organization of Agricultural Production**

Two strategies of rural development competed for the attention of Ethiopian policy makers during the socialist period. (1) The smallholder approach based on individual freehold, a strong private sector, and public sector expenditures in support of essential agricultural sector institutions and infrastructures. (2) The agrarian socialism approach based on collective ownership of the means of production, group farming, state farms, and government control of rural marketing. Although the smallholder strategy has been the preferred approach on several grounds, the socialist regime pursued agrarian socialism as its development strategy. Agrarian socialism was promoted through land tenure rules, producer and service cooperative promotion, state farm expansion, villagization and resettlement initiatives, production input and output marketing regulations, and direct and indirect taxation practices (Cohen and Isacksson, 1988).

During the socialist period, the state emerged as a dominant economic agent in the economy. The rationale behind this state hegemony was that socialization of the production process

would in the first place involve transferring ownership of the means of production to the public. This, it was alleged, could be achieved only when the state as the representative of the people and in the interest of the Ethiopian workers and the peasants, directly owns and controls natural resources, key industries and commercial and financial sectors of the economy. One factor that profoundly altered the agrarian structure was thus the radical land reform that made all rural lands the collective property of the Ethiopian people (Assefa, 1995; Dejene, 1996; Abebe, 2000). The landlord-tenant relationships were abolished and large-scale commercial farms were nationalized without compensation. Moreover, new and radically different types of production relations emerged in the rural areas after the land reform (Cohen and Isacksson, 1988).

Collectivization was seen by the government as the basis for transforming agriculture and ensuring socialist production relations in the rural areas. In this regard, the formation of producers' co-operatives has been given top priority by the government with the aim of creating large-scale production units, which may achieve better utilization of land, labor, and equipment through a three-stage collectivization process. The main objective of establishing producers' co-operatives was to organize the rural people into effective production units. They were also considered future centers of technological diffusion in agricultural production (Cohen and Isacksson, 1988). Despite the support producers' co-operatives received from the government the growth of these co-operatives was not satisfactory (Dejene, 1996). Therefore, the socialist transformation of agriculture has proved to be overall a very slow and difficult process.

Moreover, the rural land reform transformed previously privately owned and managed large-scale farms into government-managed and controlled state farms. All the large-scale commercial farms were nationalized and organized either as state farms or co-operative farms. The main objectives of the state farms were to alleviate the national food shortage problems, provide raw materials for the domestic industries, and produce for export to acquire foreign exchange. In addition, state farms were supposed to expand and establish agro-industries, create employment opportunities, and introduce new farming techniques. The state farms absorbed most of the government expenditure on agriculture. They received more than 80 percent of the chemical fertilizer, 95 percent of the improved seeds and 80 percent of the credit (Stroud and Mulugetta, 1992). But the contribution of state farms either to total output

or cultivated area was very negligible compared with private smallholders (World Bank, 1990).

## 2.2.2 Agricultural Development Programs and Productivity of Smallholders

### 2.2.2.1 The Package Agricultural Development Program

Several agricultural development programs had been initiated before the land reform to promote the development of the agricultural sector. Some of these projects were modified to fit the conditions after the land reform and continued to be operational even after the reform. The Minimum Package Program (MPP), which was a national program in scope and was started before the land reform, continued to operate in a different phase after the reform with the aim of increasing food production by developing and providing improved crop production packages to the farmers. After the first phase of MPPI was completed in 1974, there was a plan to extend MPPI to its second phase under MPPII for the period 1978-1982. However, due to the political developments and due to the land reform since 1974 it was necessary to re-draft the proposals of the MPPII. It was launched in 1980/81 and was officially terminated in 1985 (Assefa, 1995).

The objectives of the MPPII included the promotion of co-operative development, expansion of applied research and demonstration and seed multiplication responsibilities. Because the 'model farmer' approach adopted under MPPI was criticized for its tendency to enrich those farmers serving as models and widening the income gap between them and the laggards, this approach was dropped under MPPII and the PAs were now used as the extension channels. The MPPII, like any other program in the country, followed the socialist path of development in agriculture. Thus the achievements of the program were severely restricted by this strategy and its contribution to increased productivity and food production had been minimal.

The overall achievements of the MPPII were unsatisfactory and the transfer of new technology had been constrained by lack of transport facilities, inadequate financial resources, lack of trained extension agents, weak linkage between research and extension and limited capacity to multiply research products to be distributed to farmers (Dejene, 1996). When the minimum package program terminated another program called the Peasant Agricultural Development program (PADEP) was initiated.

### 2.2.2.2 The Peasant Agricultural Development Program

The impact of MPPII was found to be minimal because of the difficulties mentioned above and its overall success was actually questionable. A revised program, initially labeled as MPPIII, was designed based upon the experiences gained from the previous MPPs. The new program acknowledged, for the first time, the existence of regional differences and emphasized the need for decentralization to bring services closer to the producers. As a result of these conscious efforts to formulate different programs for different agro-climatic regions, PADEP was conceived and launched after the MPPII was terminated. Location-specific and regionally demarcated projects were designed so that each project included areas with relatively homogeneous agro-climatic zones. PADEP had thus different characters in each zone and consisted of eight separate “zonal development projects”, each project being based on the specific resource endowment, constraints and needs present in a particular zone.

PADEP emphasized increasing smallholder food production in selected high potential highland areas to reduce the prevailing food deficit and provide domestic industries with the necessary raw materials. Moreover, it was aimed to strengthen the organization and promotion of co-operatives as well as the institutional capability within the Ministry of Agriculture (MOA) and other institutions. The project gave more emphasis to the surplus-producing areas such that the Training and Visit system of extension could be implemented by assigning a development agent to work with 1300 households, whereas this ratio was as low as 1:2000 in non-surplus districts (Bezabih, 2000). The separate projects under the umbrella of PADEP adopted a strategy of decentralized agricultural development and all of them incorporated various components including agricultural development and extension, conservation-based developments, infrastructure development, and institution building.

Because of the delay in the implementation of the actual PADEP projects, however, other interim measures that were related to PADEP were undertaken. The surplus-producing districts' program was one such measure that was commenced around 1987 as an intermediate solution until all PADEP projects could be implemented and was to act as pilot project for the mobilization and implementation of the actual projects. The main aim of this program was to increase total grain production within the country in the shortest possible time to solve the food crisis facing the country. This was to be accomplished by ensuring the provision of agricultural inputs to farmers within the priority areas and by improving the extension and

other support facilities (Solomon, 1990). However, this program did not last long and was soon discontinued.

### 2.2.2.3 Arsi Comprehensive Rural Development Program

After the land reform, the Chilalo Agricultural Development Unit (CADU), which was implemented during the imperial regime, was also transformed into a more comprehensive project in terms of its coverage. Other two districts in Arsi province were incorporated and it was then renamed as the Arsi Rural Development Unit (ARDU) to reflect the spatial coverage of the project. The objectives of ARDU were more or less similar with CADU. But the 'model farmer' approach, which was used as the extension channel in CADU, was dropped and replaced by PAs. The provision of agricultural services by the project had increased the production and marketable surplus of the farmers in the region (Dejene, 1996; Solomon, 1990).

The per capita income of Arsi farmers was also substantially higher than that of farmers in other regions. Cultivated area in Chilalo increased significantly over the years. In the case of barley and wheat, cultivated area increased two fold in 1980 (Assefa, 1995). The research unit of ARDU was particularly interested in identifying high-yielding varieties of wheat and barley. The growth in wheat and barley areas, which have been particularly profitable, was the result of such efforts. With regard to modern yield-increasing input distribution, the consumption of fertilizer, improved seeds, and complementary services had increased substantially. Fertilizer and improved seed distribution and the number of credit participants increased significantly between 1974/75 and 1980/81. The research output of ARDU had also important applications in other areas of the country. The major undesirable effect of the project was that the concentration of available funds only in one region had obviously led to inter-regional inequalities among smallholder farmers. Furthermore, owing to its huge budgetary requirements, the project had to be phased out (Solomon, 1990; Assefa, 1995).

### 2.2.3 Impediments to Smallholder Agricultural Productivity

Most west donors and experts argue that the key to the agricultural development of Ethiopia lies in its smallholder sector. They hold that the land reform of 1975 unfroze Ethiopia's agricultural potential and that smallholders are the engine of growth that could drive the

economic development of the country. It is argued that with the right price incentives and the public support of research, extension, credit, and private marketing infrastructure, smallholders can dramatically raise their yields, marketed output, and incomes. The resulting rise in rural incomes should increase the quality of rural life and create jobs in the small towns and urban centers that sell goods and services to rural producers (Cohen and Isacksson, 1988). Arguments for the adoption of this strategy by Ethiopia were supported by the fact that the country's agricultural sector is dominated by smallholders.

Based on the proportion of the land they cultivate and by the proportion of total agricultural production they contribute, the smallholders had a dominant position in agriculture. The private sector accounted for over 90 percent of the cultivated land and agricultural production. Besides, the sector provides employment for about 80 percent of the country's labor force. Although the land reform stipulated that a rural household could possess up to a maximum of 10 hectares, the majority of peasants in many parts of the country cultivated tiny plots, the largest of which may not be bigger than one hectare. Insecurity of tenure, obsolete farming techniques, and poor support services were responsible for the low productivity of the sector. The distribution of fertilizers and improved seeds, the most important yield-increasing inputs in Ethiopia, had always been highly biased towards the socialized sector. These inputs were supplied to small farmers who were cultivating their land individually only after the demand of state farms and co-operatives had been satisfied. The effect of all this bias against smallholders meant declining agricultural production (Stroud and Mulugetta, 1992).

### 2.2.3.1 Pricing and Marketing of Agricultural Produce

The socialist government had increasingly expanded its control over the supply of agricultural inputs and the marketing of farm production. In addition to institutional changes discussed earlier, pricing and marketing policies had also significant impact on smallholders' production. After 1974, the important economic activities were brought under the control of the state and central planning was adopted as the main instrument of management, guidance and acceleration of the economy. The government started to control and command the economy through price control measures, trade restrictions and imposed quota delivery systems. Before 1974 there had been a relatively free, but poorly integrated, system of marketing in which only some merchants had often monopoly power.



The government established the Agricultural Marketing Corporation (AMC) in 1976 as the main instrument of state intervention to control the marketing activity and stabilize producers' and consumers' prices. The corporation was created, at least theoretically, to reduce marketing margins to the advantage of the producer, to ensure the timely and efficient supply of farm inputs, and to assure adequate supplies for the public distribution system. It was supposed to cover its operational costs, including depreciation and interest on capital from its own margins. The corporation offered arbitrary prices during the initial years of its operations. However, it gradually introduced planned purchases and quota delivery, fixed and uniform producer prices and restriction of movement of grains from one region to another.

The state farms and producers' co-operatives were required to deliver all of their marketed output to the AMC, at prices, of course, higher than those paid to the smallholders. The purchases from private smallholders were based on compulsory quota systems. Quotas were allocated to each region on the basis of the number of PA and traders in the respective region and the PAs in turn assigned these quotas to the individual members. The compulsory quota system made the function of prices irrelevant and eliminated price competition between AMC and the private traders. In this way the government was able to extract large amount of grain from the rural areas for urban consumption and for the army. The prices were basically set with the aim of keeping low the retail price in the urban areas. The purchase prices, which were set in 1980, remained unchanged until 1988. Such prices served as disincentives to farmers and seriously undermined agricultural production and productivity. Consequent to all these there were widespread dissatisfactions among the peasantry.

#### 2.2.3.2 Credit, Extension Services, and Input Distribution

The policies pursued by the socialist government with respect to the distribution and supply of agricultural inputs to help farmers realize the gains of new technology had an important impact on smallholders' production and productivity. Limited availability, high input prices, and inadequate and untimely delivery of these inputs and complementary services had a detrimental effect on agriculture and food production. The price policy had an impact on the utilization of modern technology and on efforts to increase productivity or efficiency. Input marketing organizations usually fail to deliver the right type of input at the right time and quantity without government intervention. The information available to farmers concerning the nature of the technology, the application techniques, and the expected results of the inputs

and the availability of credit for the purchase of these inputs were additional aspects that legalize government intervention.

The use of modern inputs by smallholder farmers in Ethiopia had been generally restricted due to a number of reasons. Fertilizer had often been unprofitable compared to the product price. Studies have shown that the benefit-cost ratio for fertilizer use, assuming AMC prices, was too low to provide adequate incentive to the farmer to use fertilizer (World Bank, 1990). While the price of crop output had been suppressed, the price of fertilizer was increasing over the years. In addition to being unprofitable because of the low product price relative to the price of fertilizer, the use of this input was also constrained by administrative difficulties and biases. Before 1984, the AMC was responsible for the procurement of inputs from abroad and the MOA was the distributing agency. However, since AMC was primarily concerned with grain purchase, it had concentrated its activities only on those regions producing surplus grain and gave little or no attention to other regions.

To improve this situation, the Agricultural Inputs Supply Corporation (AISCO) was established in October 1984 and was given the responsibility of the procurement and distribution of fertilizer and improved seeds to farmers. This organization was, however, unable to meet the growing demand for inputs by farmers. In general, the distribution of agricultural services was limited and inefficient in that most of the time it was not delivered timely. Lack of foreign exchange to import chemical fertilizer also worsened the scarcity of fertilizer and other inputs. As a result of these problems, the consumption of inorganic fertilizer in Ethiopia had been less than many other countries in the region (Cohen and Issacksson, 1988).

In the case of improved seed distribution, more than 90 percent of the seed was usually distributed to state farms and the rest provided to smallholders and producers' co-operatives. Smallholders had not been entitled to bank credit for seeds except some fertilizer credit. Priority had always been accorded to state farms in the disbursement of agricultural credit. In the case of service co-operatives, only registered co-operatives were entitled to bank credit. Agricultural credit, therefore, did not play any significant role in promoting the productivity of smallholder agriculture.

The MOA and other institutions undertook extension activities to serve smallholders and producers' co-operatives. Extension agents demonstrated new technology, distributed inputs, carried out soil and water conservation projects, and undertook other similar activities. The Training and Visit system of the World Bank was adopted in the country in 1987 in which extension agents would visit the farmer on fortnightly schedule. One development agent was supposed to serve a minimum of about 1600 households under this system. Nevertheless, the extension agents did not have the necessary technology that could be disseminated to the farmers nor did they have adequate technical knowledge and logistic support from the administration during the socialist regime that forced them to be stationed in the towns.

#### 2.2.4 Agricultural Sector Performance

Aggregate economic performance and that of the agricultural sector deteriorated during this period compared to figures recorded during the imperial regime. Not only did growth rates decline, but also they fluctuated markedly. Annual growth of agricultural GDP plunged below zero in seven of the 16 years. Aggregate GDP for the period 1975 to 1990 grew by an average of 2 percent per annum. It too fell below zero in four of these years. Growth of average agricultural GDP per annum stagnated between 1975 and 1984, and registered a growth rate of 2 percent per annum between 1985 and 1990. On the whole, the post-1974 annual agricultural growth rate was much lower than the agricultural growth rate during the 1964-1974 period. Per capita GDP declined at the rate of 0.8 percent per annum during the same period. Agricultural stagnation was largely responsible for the situation. Since the 1979/80, for instance, harvest had fallen below the rate achieved during the imperial regime and had failed to keep up with the high population growth rates (Cohen and Isacksson, 1988; Abebe, 2000).

The preceding review demonstrates that the agricultural sector policies of the socialist regime were characterized by several unfavorable features including the following. (1) Nationalization of all private and commercial farms and prohibition of private investments in the agricultural sector. (2) Involuntary collectivization of peasants into producers' and service cooperatives. (3) Forced villagization, government control of agricultural markets, and forced food grain quota deliveries at predetermined low prices. Defective agricultural policies penalized the smallholders and prevented them from attaining increased food production and productivity. In addition to the biased and ill-conceived development strategy of the socialist

regime, civil war, drought, and other natural calamities as well as the international economic relations had contributed to the problem. Up until the downfall of the regime in 1991, these ill-conceived government interventions largely contributed to the lack of success in the development of agriculture. Far-reaching macroeconomic policies have been adopted to rectify these policy constraints since the seizure of power by the Transitional Government of Ethiopia.

### 2.3 Current Development Strategies

The Ethiopian economy has had mixed fortunes. It exhibited a situation from one of respectable growth of 1960's to the stagnation and decline of the 1970s and 1980s. GDP grew only by 1.5 percent during 1974-1990. By the dawning of the 1990s, the economy showed severe macroeconomic imbalances, severe food deficit, growing indebtedness, and increased vulnerability. As such the social and economic problems of the country have cumulatively become severe and complex mirroring sharp contrast between considerable potential and widespread poverty. Thus, by the beginning of the transition period in 1991/92, it was clearly observable that Ethiopia faced daunting economic development challenges: breaking the poverty trap and putting the economy on the path of sustained development. To this end, a new economic policy was put in place which was translated into a series of concrete economic reform programs (Mekonnen, 1999).

Following the downfall of the socialist regime in 1991, a new economic policy was drawn up to re-orient the economy and take the country out of the economic and social crisis. Most of the past economic policies were dismantled and replaced with new economic policies. The TGE, like the previous governments, acknowledged the importance of the agricultural sector and indicated that it could play a leading role in the economic development of the country. The transitional economic policy had also underscored the need to encourage the peasant sub-sector since it occupies a dominant position in terms of agricultural production (TGE, 1991). According to the economic policy smallholders would be supported by all available means because they constitute the majority of the rural population. Previous policies on market restrictions and discriminatory provision of agricultural support and extension services were abolished and replaced either with the norms of free markets, or smallholder farmers were given priority. Price controls have been lifted and the smallholders are allowed to sell their

output at any place at market prices. It has also been stated that the transitional government would allocate more resources to expand and improve their productivity especially through improved agricultural production technologies.

### 2.3.1 Agricultural Development-led Industrialization Strategy

The present agricultural development strategy evolved from the new economic policy of the TGE and this has been operationalized through an economic reform program (Mekonnen, 1994). In essence, the present development strategy revolves around productivity enhancement of smallholder agriculture and industrialization based on utilization of domestic raw materials with labor intensive technology. This strategy is popularly known in the economic literature as agricultural development-led industrialization, tailored to fit the Ethiopian context (Mekonnen, 1999). The strategy visualizes export-led growth as a propeller for an interdependent agricultural and industrial development. By and large, the strategy of ADLI in the context of Ethiopia focuses primarily on agricultural development. This is to be attained through improved smallholder agricultural productivity (MEDaC, 1999).

Within the strategy of ADLI, the development of smallholder agriculture was envisaged to proceed in three stages. Stage one involves the improvement of agricultural practices including animal husbandry and the utilization of better seeds. Stage two consists of the development of agricultural infrastructure, such as small-scale irrigation, and the introduction of modern inputs including fertilizers and agrochemicals. Stage three relates to increasing farm size that would take place alongside the shifting of population from agriculture to non-agricultural activities. Broadly, the aim is to attain food self-sufficiency, to reverse ecological degradation, and to raise the competitive advantage of Ethiopia's agriculture. The first stage has been actively implemented mainly through agricultural extension programs: SG and NEP.

#### 2.3.1.1 The Sasakawa-Global 2000 Project

The SG agricultural project, started in Sub-Saharan Africa in 1986, was established by two humanitarian non-governmental organizations - the Sasakawa Africa Association and Global 2000 of the Carter Center. The primary goal of the SG project was to develop programs for technology demonstration in cooperation with national extension services; that is improving the capacity of national extension services to transfer seed-fertilizer technology to achieve

food security among small scale farmers and the country at large (Takele, 1996). The SG project in Ethiopia was initiated in 1993 in collaboration with the national extension service and has developed a simple, and yet effective, approach to transfer agricultural production technologies. The centerpiece of this approach is the farmer-managed Extension Management Training Plot (EMTP). This is an on-farm demonstration plot that usually is half a hectare in size so that participating farmers can clearly assess the labor and other input requirements of the recommended technology. The focus of the project is on the regions and districts of high production potential where success in raising yields would have a major impact on national food supplies.

The EMTPs introduce improved technologies for the most important food crops of an area, including maize, wheat, tef, and sorghum for which proven and markedly superior technologies are available. The recommended technology packages include planting improved varieties at optimum densities, moderate and appropriate use of fertilizers and improved cultural practices that better control weeds, insects, and diseases as well as application of chemicals when necessary.

The distinctive feature that the SG technology transfer program manifested is simply filling the major gaps that had existed in the various extension systems of the past. These include access to technologies that are developed by the National Agricultural Research Systems, and other inputs and making them physically available through the provision of credit. Intensive practical training of extension workers from the central staff down to the development agents and the improvement of mobility of extension workers through provision of vehicles, motorcycles, and bicycles have greatly facilitated the success of the program (Dejene, 1996). It is through these approaches that the project proved that, if available technologies are properly packaged and utilized, they would considerably increase the productivity of major cereals grown in the country, under normal climatic conditions.

### 2.3.1.2 The New Extension Program

In order to enhance the implementation of the agricultural development-led industrialization development strategy, the government sponsored a task force that comprehensively assessed the agricultural extension system of the country. The task force issued a guideline on what it called Participatory Demonstration and Training Extension System in November 1994 (TGE,

1994) and has been actively implemented since 1994/95 as a new agricultural extension program in the country. It was synthesized from the experiences of SG project, which embarked upon the popularization of large-scale (usually half-hectare) on-farm technology demonstration plots.

In formulating NEP, attempts were made to screen out and preclude shortcomings of past extension systems. Accordingly the shortcomings of the previous extension systems were outlined as follows. (1) Extension service was erroneously organized by commodity rather than by function. (2) Extension service was rather prescriptive in the sense that it only transmitted information without adequate or no supply of inputs. Hence, input and credit supplying institutions were not well organized and oriented. (3) Extension service was limited only to high potential areas of the country, neglecting other agro-climatic zones. (4) Demonstration sites/plots were not widely distributed rather they were undertaken in fences. (5) Extension service was not participatory. Farmers were not participating in identification, planning, implementation, monitoring and evaluation of technologies. (6) Governmental and non-governmental agricultural development projects and programs were not well coordinated and freed from replication of efforts. (7) Extension information was not effectively communicated through different methods (demonstration, publications, and radio). (8) Budgets, manpower, and means of transport were not adequately allocated for the extension service. (9) Inefficiency in administration and management (TGE, 1994).

NEP was developed against these backgrounds aiming to improve smallholder agricultural production and productivity through better access to technologies. It promotes an integrated and science-based packages developed for different agro-climatic zones (highland mixed farming system zone, highland degraded and low moisture zone, lowland agro-pastoralist zone, and lowland pastoralist zone) and is aimed at sustainable intensification of agriculture and use of natural resources. It tries to merge the extension management principles of the World Bank's Training and Visit extension system with the technology diffusion experience of the SG project. The major elements of the extension package are fertilizer, improved seeds, pesticides and better cultural practices mainly for cereal crops (tef, maize, barley, sorghum and millet). Under the program, the district offices of agriculture provide participating farmers with a package of inputs. Participants agree to allocate 0.25 to 0.50 hectares of land for the demonstration plot and pay a 25-50 percent down payment on the input package at the time of planting with the balance due after harvest. The plots are managed by the farmers under the

supervision of the extension agents. Its implementation started in 1994/95 cropping season primarily through dissemination of crop technologies. In 1997/98, it incorporated the transfer of livestock technologies. During its first year of implementation, about 3, 200 half-hectare on-farm demonstration plots were established and average yields for the major crops, including maize, wheat, tef, and sorghum increased by 98 percent and the increment was more than double for maize and wheat. About 360,000 and 650,000 demonstration plots were implemented in the second and third years, respectively, although assessment of the results has not been made (Takele, 1996).

NEP has expanded to areas that were previously neglected by the extension service. This expansion has taken place at a time of major changes in agricultural policies. NEP has put increasing demands on the quality and amount of extension, credit, and input supply services, which are critical for its successful implementation. However, these services have been far from being adequate and are poorly integrated. First, extension agents have very poor technical knowledge about new technologies and are also involved in too many non-extension tasks, including processing credit applications, dealing with input distributors, mobilizing farmers for public works, and collecting loans and taxes. Second, the rapid expansion of NEP to less favorable and marginal areas required more supervision and credit due to the low literacy rates and poor asset endowments of the farmers in these areas. Third, due to very poor infrastructural facilities especially in the marginal areas, adequate and timely distribution of inputs to farmers has been a major constraint facing NEP. It is not well known, however, to what extent the intended productivity gains from improved agricultural production technologies have been realized through NEP. Therefore, it is of interest in this study to assess the impact of NEP on the production efficiency of smallholder farmers.

### **2.3.2 The Current State of Ethiopian Agriculture**

Like in many other developing countries, Ethiopian agriculture continues to make the greatest contribution to the GDP although it has played a limited role as an engine of economic growth. Its average share was 68 percent of GDP during the imperial regime. The share declined to 55 percent during the socialist regime and presently it stands at 50 percent of GDP (Table 2.1). Agriculture's continued dominance is also implied by its strong correlation with GDP. The share of the service sector has increased from 25 percent during the imperial regime to 34 percent during the socialist regime and 39 percent at present. The contribution of



the manufacturing sector remained within the range of 9-11 percent over the same period. The fact that agriculture has accounted for the lion's share in GDP for the past 40 years signifies that the Ethiopian economy has not yet undergone structural transformation and therefore that production constraints similar to those in the 1960s are exerting similar influence on today's overall GDP growth. The performance of the overall economy and agriculture's role in GDP changes could be inferred from GDP growth rates. GDP growth rate declined by 1.82 percent during the socialist regime compared to the imperial regime and grew by 3.09 percent after 1991 compared to its level during the socialist regime.

Table 2.1: Average growth rates and sectoral shares in GDP

Year	Agriculture		Manufacturing		Services		GDP Growth rate
	Growth rate	Share	Growth rate	Share	Growth rate	Share	
1963-1974	0.9	68	7	5	7	25	3.5
1975-1991	1.3	55	1.2	6.5	2.6	34	1.7
1992-1998	2	50	7	6.4	8	39	4.8

Source: Zerihun, 2002.

This is attributed to increased performance in the manufacturing and service sectors than the agricultural sector. Improved availability of inputs and spare parts to the highly incapacitated manufacturing sector were the major factors behind the profound growth registered in the industrial sector (MEDaC, 1999). This implies that GDP growth has mostly been the outcome of improved performance in the non-agricultural sector. Growth in the agricultural sector has not been stable compared to the manufacturing and service sectors. It has been extremely vulnerable to climatic variations. In the major drought years of 1973/74, 1983/1984, 1993/1994, and 1997/1998, agricultural production declined by 1.2, 17, 4, and 10 percent, respectively.

Severe drought was also reported in the year 2000 but its impact on agriculture is not yet made public. Good rain years such as 1982, 1986, 1992, and 1995, on the other hand, brought about a 13, 19, 6, and 15 percent growth in value added in agriculture, respectively. Most of the remaining years, which exhibited positive growth rates were years of recovery (Zerihun, 2002). Since 1995/96 cropping season, when NEP became operational in all regional states and agro-climatic zones of the country, fertilizer and improved seeds have witnessed

widespread and increasing rates of adoption. This is attributed to the growing number of farming households embraced in NEP. In 1998/99, for example, an estimated 3.7 million farming households participated in the program and agricultural credit rose from 8.1 million to 153.2 million Birr<sup>1</sup> (Befekadu and Berhanu, 1999).

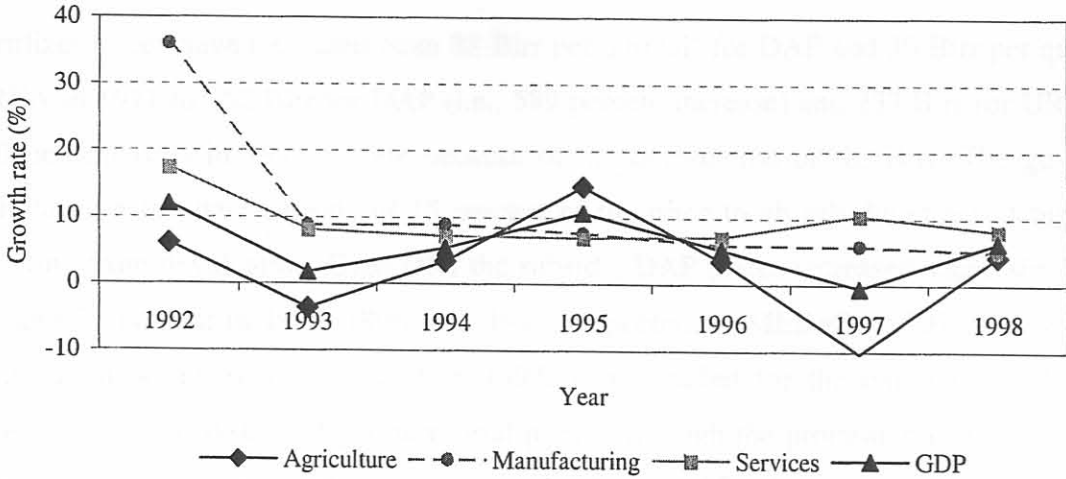


Figure 2.1: Sectoral growth rates.

Source: Own computation using data from MEDaC, 1999.

### 2.3.2.1 Trends in Fertilizer Utilization

Consistent with the new economic policy, the government designed the new marketing for fertilizer in 1992 with the main objective of the fertilizer market and creating a multi-channel distribution system. Average national fertilizer application per hectare remained negligible through the mid 1980s ranging from 0.1 kg in 1971 to 4 kg per hectare in 1985/86. Beginning in 1986, it started to grow steadily and fall back in 1993 as a result of devaluation (Figure 2.2). Fertilizer application grew from 22.1 kg per hectare in 1991/92 to 34.5 kg per hectare in 1999/2000. Although this is below recommended application rates, the trend is very promising. Fertilizer consumption increased from 145,709 tons in 1990 to 206, 294 tons in 1997 showing an annual average growth rate of 5 percent over the period. The share of fertilizer used by smallholders has increased from 73 percent during 1987-1990 to 94 percent in 1997. Of the total fertilizer used, DAP accounted for 78 percent while UREA accounted for the remaining 22 percent (MEDaC, 1999). Because of the gradual liberalization of the fertilizer market, however, fertilizer prices have increased considerably over the years and this

<sup>1</sup> Birr is the currency of Ethiopia. As of January 2003, 1 US\$=8.58 Birr.

has proved to be a major constraint to greater fertilizer technology utilization as shown by a declining trend of total fertilizer use in Figure 2.2 after 1996.

### 2.3.2.2 Trends in Fertilizer Prices

Fertilizer prices have increased from 38 Birr per quintal<sup>2</sup> for DAP and 30 Birr per quintal for UREA in 1971 to 262 Birr for DAP (i.e., 589 percent increase) and 237 Birr for UREA (i.e., 690 percent rise) in 1997 mainly because of the devaluation of the Birr. The government introduced a fertilizer subsidy of 15 percent of the price to absorb the effect of high prices resulting from devaluation. Even after the subsidy, DAP prices increased successively by 19, 33, and 75 percent in 1995, 1996, and 1997, respectively (MEDaC, 1999). A new fertilizer distribution policy was introduced in 1997, which called for the elimination of fertilizer subsidies and the system of pan-territorial pricing through the promotion of the involvement of private sectors in importation, distribution, and sales of fertilizer.

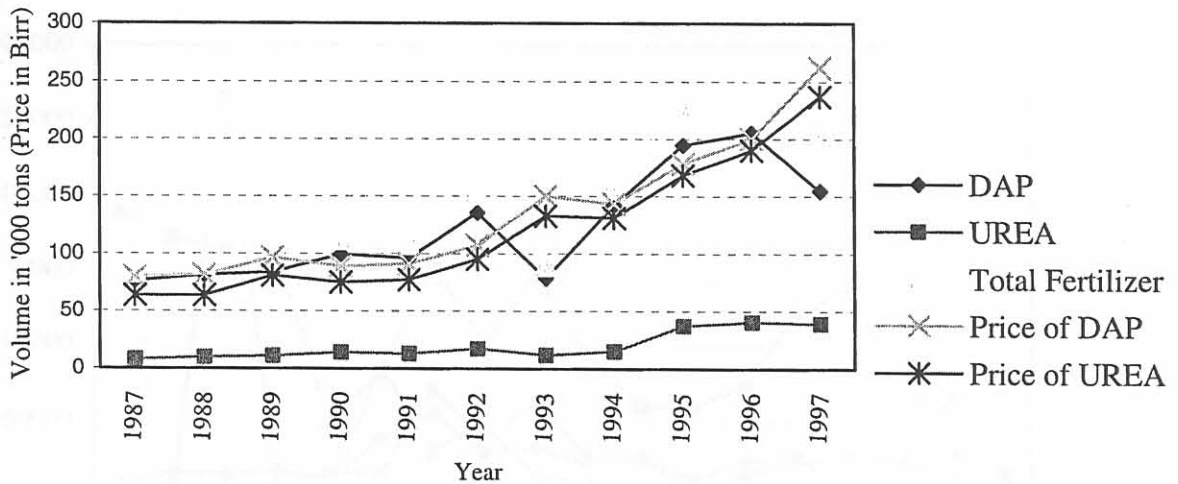


Figure 2.2: Trends in smallholder fertilizer use and prices.

Source: Own computation using data from MEDaC, 1999.

In compliance with the workings of a market economy, the government has been looking for a phased removal of fertilizer price controls and subsidies. Accordingly, the government deregulated the retail price of fertilizer on 31 January 1997 immediately after the removal of fertilizer subsidies by the end of 1996. Wholesale prices were deregulated at the end of 1997

<sup>2</sup> One quintal is equivalent to 100 kilograms.

and in February 1998, the government completely liberalized the fertilizer market including the distribution system (MEDaC, 1999).

### 2.3.2.3 Trends in Improved Seed Utilization

In October 1992, TGE issued a National Seed Industry Policy (NSIP) with the objective of laying the ground for the development of a healthy seed industry in which private seed enterprises would be encouraged to actively participate in the production and distribution of improved seeds. To properly implement the policy, the TGE established the National Seed Industry Agency (NSIA) entrusted with the task of guiding and monitoring the National Seed Industry along sound lines. While seed certification is the sole responsibility of the NSIA, the role of the Ethiopian Seed Enterprise (ESE) is to obtain breeder seeds from research institutions, multiply breeder seeds into basic and pre-basic seeds, and multiply basic seeds into commercial seeds (MEDaC, 1999).

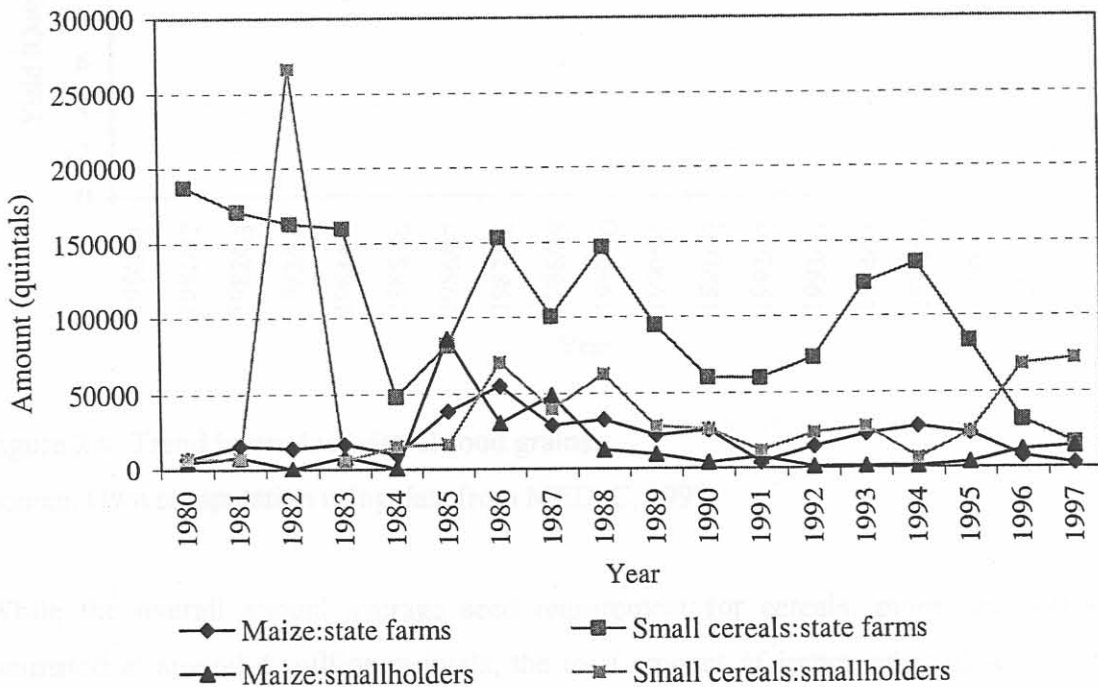


Figure 2.3: Trends in improved seed utilization by major crop and sector.

Source: Own computation using data from ESE, 1997 and MEDaC, 1999.

2.3.2.4 The State of Food Production, Productivity, and Food Security

The production of major food grains in the past few decades has been characterized by wide fluctuations in total output and a very slow growth. Performance throughout the 1980s was low with cereal production increasing at a rate of 1.7 percent annually compared to a population growth rate of 2.9 percent. During the 1990s the performance of the crop sub-sector showed an improvement over the 1980s. Estimates of food grain production grew from a longer-term annual average of 60 million quintals in 1980/81 to 103.27 million quintals in 1995/96 and 104.3 million quintals in 1996/97 (CSA, 1997). The increase in production in 1995/96 and 1996/97 was mainly due to very good weather and expansion of cultivated area. But the contribution of increased use of improved agricultural technologies was argued to have been minimal mainly because yields of most cereals remained stagnant (Mulat, 1999).

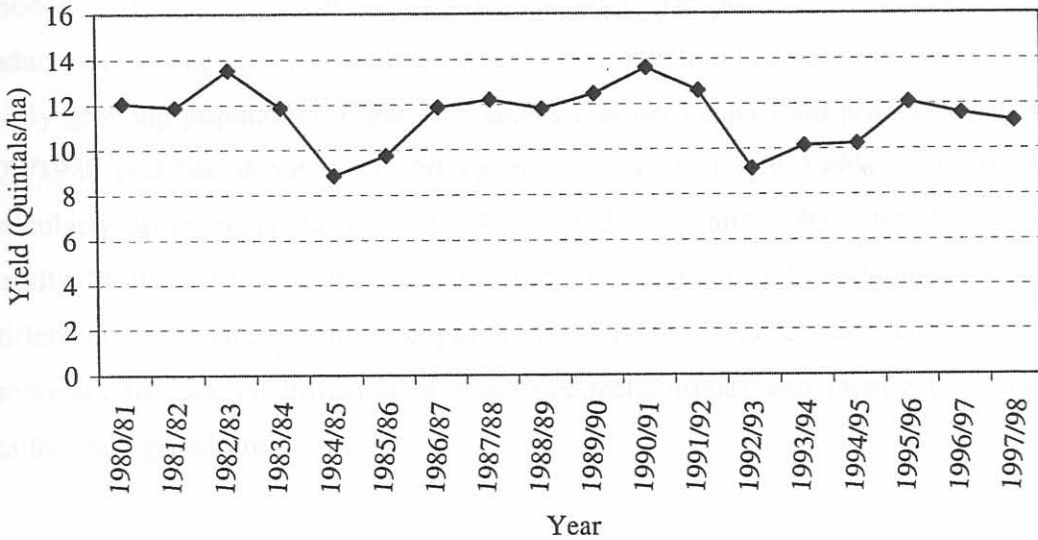


Figure 2.4: Trend in productivity of food grains.

Source: Own computation using data from MEDaC, 1999.

While the overall annual average seed requirement for cereals, pulses and oil seeds is estimated at around 4 million quintals, the total amount of improved seed sold to different users has not exceeded 45 percent of the requirement. Improved seeds distributed so far include different varieties of maize, sorghum, pulses, small cereals (wheat, barley, and tef), and oil crops. As shown in Figure 2.3, the largest quantity of improved seeds distributed so far is the small cereals followed by maize. Wheat constitutes about 90 percent of the seeds of small cereals distributed. In general, however, lack of adequate supply of improved seed

varieties has been one of the critical constraints hindering effective extension work in the country (Bezabih, 2000). There was not a consistent supply of improved seeds as shown by the fluctuation of the quantity distributed over the past many years. It showed an increasing tendency during the years before 1983/84 and declined thereon until it turned up starting the 1991/92 cropping year. The trend of improved seeds distributed during the recent years shows an increasing tendency for the peasant farms while it declines for the state farms.

With the exception of the good performance of maize yields of up to 20 quintals per hectare in 1995/96, grain yields per hectare for total grains have remained between 9 and 14 quintals per hectare (Figure 2.4). This suggests that increased production has come about through intensive cultivation only in the case of maize (Tadesse, 2002). Further, because these trends are national averages, they mask potentially significant differences between different growing regions in terms of the changes in yields per hectare. Despite a general increase in total grain production, the rate of change in per capita food production has been very slow because of the rapidly growing population. Figure 2.5 shows that per capita food production was 200 kg in 1979/1980 and had dropped to 150 kg in the early and mid 1990s. A sharp decline was particularly observed in the years 1984/85, 1992/1993, and 1993/1994. The National Food Security Strategy focuses on increasing food and agricultural production, improving food entitlement, and strengthening capacity to manage food crises. The food production component focuses on diffusion of improved technologies and raising the productivity of smallholder agriculture.

Food security focuses on eliminating long term food deprivation and averting short term stresses in the capacity of commanding enough food. It was initially conceptualized as a problem of food supply against the level of consumption needs. This view, however, failed to be practical when there was an increase in the size of famine, hunger and malnutrition irrespective of the increase in the volume of food supply. This has made a shift of thinking from food availability consideration to a food entitlement approach. Food insecurity can be of two types depending on its intensity: chronic food insecurity and transitory food insecurity. The former is a sign of poverty and often caused by a constant failure to acquire enough food while the latter is caused by short term fluctuation in production or prices of food. It also takes a form of famine requiring an urgent and coordinated effort to withstand its shocks (MEDaC, 1999; Bezabih, 2000). The size of the food insecure people in Ethiopia has varied between 40 and 50 percent over the last decade (MEDaC, 1999). This food insecurity problem

is generally highly correlated with the decline in food production. Although an increase in food production has been observed in some of the post-reform years, there is still an increasing food deficit in Ethiopia (Devereux, 2000).

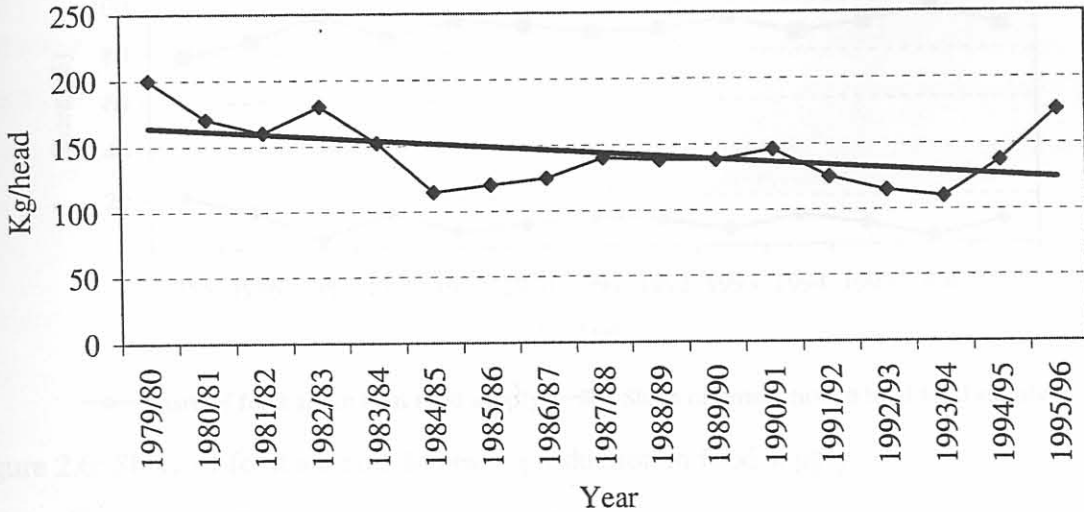


Figure 2.5: Trend in per capita food production.

Source: Adapted from MEDaC, 1999 and Befekadu and Berhanu, 1999.

For decades, the gap created by domestic production shortfalls has been largely met through external food aid. The annual volume of cereal food aid has ranged from 2.3 percent to 26 percent of the total grain production over the period 1985-1996 (MEDaC, 1999). Food aid has thus been the most important guarantee of household food security in rural Ethiopia. Although food aid is a standard response to transitory food insecurity (e.g., drought emergencies), it has become an institutionalized response to chronic food insecurity as well (Devereux, 2000). Annual food aid deliveries since 1980 have varied from 200, 000 to 1, 200, 000 metric tones. The number of needy people ranged from 2.5 million in 1987 and 7.85 million in 1992 to 7.7 million in 2000. Food aid deliveries averaged 11 percent of national cereals production or 12 kg per capita between 1985 and 1996, peaking at 26 percent in famine years (Clay et al., 1999).

Figure 2.6 shows that in the famine years such as 1985, food aid's share in total food supply was 21 percent implying that domestic food grain production contributed only 79 percent of the country's food supply. Although a slight improvement in food grain production has been observed in the period since 1991 compared with that during the socialist regime, food aid has continued to be an important source of food supply to the nation. Since 1996, for example, the

share of food aid in total food supply has been increasing in view of the country's inability to achieve food self sufficiency.

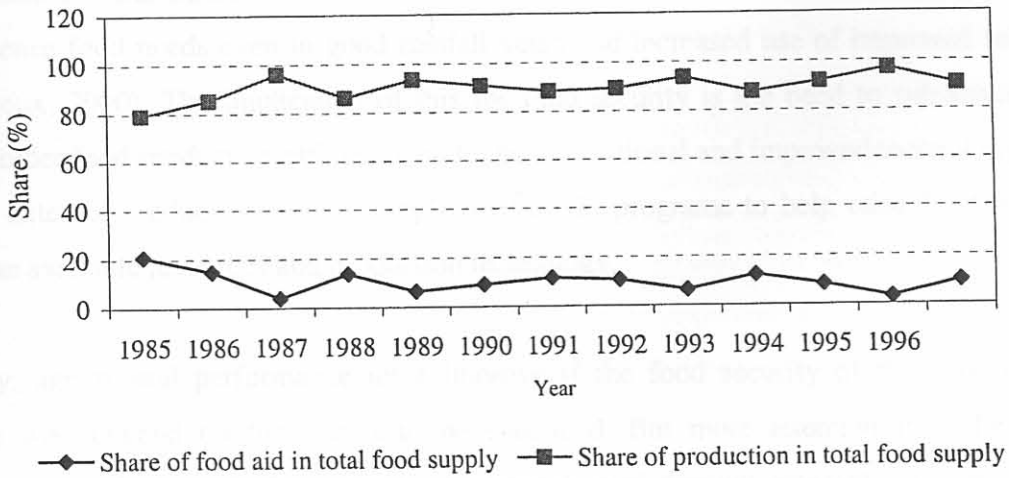


Figure 2.6: Share of food aid and domestic production in food supply.

Source: Own computation.

Current conventional wisdom on food insecurity in Ethiopia asserts that the problem can be simply conceptualized as follows (Devereux, 2000). (1) Landholdings are too small to allow most farming households to achieve food self-sufficiency. (2) Population pressure reduces landholdings further and places intolerable stress on an already fragile natural resource base. (3) Soil fertility is declining due to intensive cultivation and limited application of yield-enhancing inputs. (4) Recurrent droughts add food production shocks to abnormally low yields. (5) Limited off-farm employment opportunities restrict diversification and migration options, leaving people trapped in increasingly unviable agriculture. The poor performance of smallholder agriculture is certainly a large part of the explanation. The implication for food security in the longer term is that a structural transformation of agriculture is urgently needed to considerably raise food production and productivity mainly through increased and efficient use of improved agricultural production technologies.

The low level of smallholder agricultural productivity and food production efficiency, despite increased use of improved technology since the NEP initiative, is reflected in the continued food deficit facing the country even in good rainfall years such as 1995/96. Befekadu and Berhanu (1999), for example, reported that the food gap rose from 0.75 million tons in 1979/80 to 5 million tons in 1993/94, falling to 2.6 million tons in 1995/96 despite a record harvest. During the late 1980s, 52 percent of Ethiopia's population consumed less than the



recommended daily allowance of 2100 kilocalories, and even in the record harvest year of 1995/96, this population fell only to 43 percent (Clay et al., 1999). This figure approximates the 40 percent of rural households who farm less than 0.5 hectares, which is inadequate to meet subsistence food needs even in good rainfall years and increased use of improved technology (Devereux, 2000). The implication of this for food security is the need to substantially raise smallholder food production efficiency under both traditional and improved technology through strong extension, education, input supply, and credit programs to help raise food production with the available resources and production technology.

Clearly, agricultural performance must improve if the food security of the majority of the people who depend on farming is to be enhanced. But more attention must be given to stabilizing yields through, for example, dissemination of drought-resistant varieties to farmers in marginal areas, rather than high-yielding but riskier varieties. More attention also needs to be given to the landless and effectively landless- farmers on tiny 'starvation plots'- for whom agricultural-based livelihoods are less sustainable from year to year. These people are chronically food insecure and will require recurrent relief until viable alternative livelihood options open up for them.

The foregoing analysis of the current agricultural development strategy and food security demonstrates that while the efforts underway to raise smallholder productivity and bring about sustained agricultural growth, mainly through increased use of improved technology, are encouraging, there remain critical constraints and problems facing smallholder agriculture that need utmost attention. Although there has been fluctuation in production and consumption of agricultural inputs and outputs, agricultural production has generally showed positive growth since NEP was launched as part of the current development strategy. In spite of the complete removal of subsidies, utilization of fertilizer has generally increased. The consumption of improved seeds and amount of input credit distributed to smallholders has also increased. However, smallholder agricultural production has failed to keep pace with population growth. A stagnation of agricultural productivity, reflected in low cereal yields despite the increased use of improved technologies of major cereal crops (Figures 2.2 and 2.3), provides most of the explanation. The intended benefits in terms of increased yields of major food crops, as demonstrated by the SG project in high potential areas following the increased use of input packages, have not been realized.