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# **Federal Democratic Republic of Ethiopia**



**MINISTRY OF AGRICULTURE AND RURAL  
DEVELOPMENT**

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**Agricultural Policies, Programs  
And Targets for a Plan for Accelerated  
and  
Sustainable Development to  
End Poverty (PASDEP)**

**2005/6 - 2009/10/**

July 2006  
Addis Ababa

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## 1. Foreword

Growth of agriculture sector in Ethiopia was hampered by a series of policy and structural constraints which resulted in a low input/low output trap, due in part to low levels of investment, low technology application, and low capacity. The solution needs to involve a structural change, for which major capacity development is needed, including a quantum change in human capacity, input supply, technology adoption, and provision of infrastructure.

### 1.1 Objective

The main objective of PASDEP is to accelerate the transformation from subsistence to commercialization of smallholder agriculture through attaining increased productivity and increased share of marketed production and continued support to pro-poor basic agriculture within the framework of the national food security program. Elements of the PASDEP program in the agricultural sector will therefore include Capacity building through training, development and adoption of a high yielding technology through strengthened agricultural research and extension service delivery mechanism, promotion of increased diversification of agriculture through high value-added commodities, promotion of commercialization of agriculture and establishment of a marketing system, development of small-scale irrigation and water harvesting technologies and sustainable use and management of natural resources.

### 1.2 Basic Principles

The basic principles underlie the strategy include:

- (a) **Improving farmers' capacity:** including upgrading their technical farming skills through stronger extension and training services; but also through better health status and general education levels in rural areas; better information availability, and strengthening institutions that can support farmers (such as competitive markets, cooperatives and farmers' unions).
- (b) **Proper utilization of agricultural land:** recognizing that land is the essential resource for all farming activities, with a dual emphasis on making sure land is available to smallholder farmers for intensive

farming, as well as for private investors for large scale farming and protecting the productivity of land through environmental management and appropriate use of inputs;

- (c) **Development paths that are compatible with different agro-ecological zones:** recognizing that the challenges, and opportunities are very different in different parts of Ethiopia, and that the response has to be tailored accordingly;
- (d) **Adoption of a labor-intensive strategy:** recognizing that Ethiopia's development needs to build on its most abundant resource, labor, and that modernization should exploit technology without being labor-displacing whenever possible;
- (e) **A coordinated development approach:** recognizing reducing poverty is about an integrated approach to rural development that includes improved social services, communications, transport, and governance institutions as much as direct agricultural interventions;

### 1.3 Agro ecological Zones

The strategy divides the country into three main agro-ecological zones in terms of rainfall, land type, altitude, and others and tailors the responses to the conditions in each zone. The main types of zones and main intervention areas are described hereunder:

- (i) **Regions with adequate rainfall.** In these areas the focus will be on exerting all possible efforts to efficiently utilize available rain water to being about the maximum possible rate of agricultural development, and promoting in areas where it is feasible. Since these areas currently play decisive role in food crop production, works in these areas will have very important role in accelerating growth and maintaining food security for both objectives the emphasis will be on improving infrastructure and market systems to facilitate increase in agricultural productivity and promote marketing of agricultural products. A major intervention focus in these areas will be on enhancing crop production with a special emphasis on high value crops for export market by maximizing yield through efficient utilization of water. Natural resources conservation, agro-

forestry and livestock development will also continue to be given due emphasis in these regions.

- (ii) **Moisture stress area**, where the emphasis will be on food security, measures to reduce the volatility of production (for example through irrigation where feasible), and increasing off-farm income opportunities, and, where appropriate, voluntary resettlement to more productive areas. The other major interventions in these areas include soil and water conservation, rehabilitation and use of natural resources and livestock resources development with special focus on small ruminants, small-scale irrigation and water harvesting with special focus on the production of high value crops for market.
- (iii) **Pastoral areas** special effort will be made to enhance specialization in livestock production and marketing. To this end, the major interventions in these areas are centered in improving the quality, expansion of health services, feed production, and improvement of breeds and development of market infrastructure. In general emphasis will be on providing appropriate infrastructure and social services and tailoring research and extension programs more to the needs of dry land agriculture and livestock development.

Commercialization of smallholder agriculture will be the engine for rural growth in the coming decade. In all regions the emphasis will be on ensuring everything possible is in place to facilitate the take-off of commercial opportunities. As indicated above, the transformation of the smallholder farmer is to be achieved through area based specialization as well as diversification of agricultural commodities.

The specialization and diversification are to be pursued in the above mentioned production zones. However, the existence of diversified agro-ecological zones in our country makes it possible to produce specialized agricultural products in the areas where the environment is conducive. An initial strategy for area specialization based on resource potential and comparative advantage for high value commodities has been developed. These areas will be further studied and the strategy further refined during the PASDEP period.

In order to further enhance commercialization and diversification and bring about accelerated development, efforts will be put in place to open up growth corridors based on the country's agro-ecological realities and resource potential where special programs will be prepared for these areas. Accordingly, the Tana-Beles region, Dire Dawa being as a center-covering eastern and western Hararghe, the Rift valley, south

and southwestern region and the Settlement areas are among some of the growth corridors identified so far for further study and implementation of agriculture and rural development program. Furthermore, it is envisaged that studies will be undertaken in the food insecure areas to identify growth corridors.

With respect to export promotion, a number of commodities have been identified from among cereals, pulses, oil crops, spices, fruits and vegetables based on their potential for a high growth impact. A process has started of studying the international markets, to better understand issues of demand, standards, duties, transport costs and competition in each of these crops; and indicative business plans are being developed for each sub-sector. The extension and research services will provide special support for intensification of these crops and the government will take steps to help areas of high potential. In this respect, more effort will be made to organize out grower's schemes and, ensuring that transport available and credit services are facilitated through micro-credit scheme, promoting savings, supporting cooperatives and linking smaller farmers with larger farmers through contractual agreements.

The government will largely restrict itself to playing an intermediating role where there are gaps. Areas where the government would have a comparative advantage include setting the regulatory framework and standards; financing infrastructure – especially roads and the Rural Roads and Transport Program – and small-scale irrigation, primarily focusing on water harvesting at the household level, helping farmers build medium-scale irrigation on a cost-recovery basis, and construction of some multi-purpose dams that would support larger-scale irrigation. Finally, in some cases the government may help with the acquisition of technology (such as specialized seeds or genetic material) from outside the country.

## **2. Specific Inputs and Programs**

### **2.1 Increasing Crop production and Productivity**

Within the framework of PASDEP, the crop production program consists of estimates of area to be cultivated, production to be achieved and productivity level that would be attained.

Currently a total of 53 technology packages for cereal, oil, pulse, fiber, fruit, vegetable, coffee, tea and spices crops have been prepared. Similarly, 12 different Development and Marketing Master Plan documents have been prepared (cereal crops- 3; pulse crops- 6; oil crops- 2; cotton - 1; fruit and

vegetables-7; coffee, tea, spices-4). Within the planned implementation period, 8 Development and Marketing Master Plan documents will be prepared for cereals, pulses, and fiber and oil crops (2 for each field crop). New technology packages will be prepared. And existing package documents revised based on improved technologies and new research findings and feedbacks from the field.

The ultimate goal of field crop production and productivity increase is to make the country food self-sufficient and to ensure household food security for the rapidly growing population as well as to improve the provision of quality products for the local agro industry and for the export market.

By the end of the PASDEP period the total area under cultivation will reach 12.65 million hectares, which is an increment of more than 2.86 % over the five years period, and a total of 38.2 million tons of production. This will be achieved through increased crop productivity (intensification) and area expansion. Intensification is to be achieved through integrated use of agricultural inputs including improved seeds, fertilizer, and effective pest control and management practices.

Within the coming 5 years efforts will be made to establish a strong linkage with agricultural research system, with regards to information exchange. Faster and effective ways of communication will be established in providing and receiving an up-to-date data on agricultural technologies. Profound assessment on the performances of technological packages and provision of feed back mechanism will be enhanced as an input for further research.

In the program, due consideration will also be given to high value /cash crops like fruit and vegetables, coffee, tea and spices which, obviously could play a significant role to enhance income and improve the living standard of smallholder farmers and strengthen the foreign currency capacity of the country, regarding the fruit and vegetable sub-sector, after analyzing the world market situation versus the country's comparative advantages a number of fruit species including /Mango, Avocado, Banana, Pineapple, apple and vegetables have been identified as prior entry areas to be focused on in the five years program planned to contribute to end poverty.

Specific areas/corridors of specialization for commercialization the production system of the above listed fruits and vegetable are also categorized in clusters of areas that facilitate the promotion of post-harvest technologies, which are the

major components to improve the supply chain performance and sustain the product quality in order to be competitive in the world market.

Accordingly, the development program gives more focus to the Eastern and Rift valley corridors, where fruits like mango and avocado and green beans will be the dominant crops. Also certain areas from the southern part of the country are selected for the commercialization of mango, avocado, and pineapple and banana production. In addition the introduction and expansion of highland fruits like apple will be encouraged in pocket areas of southern Ethiopia, where relatively better experience is currently prevailing. In this regard, also wide areas of highlands in central part of the country will be included in the program.

Taking into account the above mentioned justifications, better quality produce of 841, 100 quintals of fruits/mango, avocado, pineapple and apple/ and 150,000 quintals of green beans targeted to be produced in the scope of the five years program and for this a total of 13,168 hectares of land will be dedicated to improved and marketable varieties of the targeted crop types.

The number of smallholders to be involved in the fruits and vegetables production program will reach 379,750 by the end of the program period. Together with the expansion program of new varieties and transfer of technologies, the productivity of matured fruit crops/8 years after plantation/ will increase by 400 % comparing with the prevailing status/50qt/ha/. Regarding the green beans it is expected to be raised by 100 %.

**Table 1 : Projected area and production estimate for all seasons (2005- 2010)**  
(Area in 000' ha, Production in million ton)

Production Season	Meher		Belg		Irrigation		Total	
	Area	Production	Area	Production	Area	Production	Area	Production
2004/2005	10993	14.62	1041	1.04	247	1.00	12281	16.66
2005/2006	11069	20.99	1052	1.18	283	1.32	12404	23.48
2006/2007	11062	23.52	1086	1.23	317	1.51	12465	26.26
2007/2008	11062	27.03	1086	1.40	379	2.08	12527	30.51
2008/2009	11066	30.33	1086	1.55	436	2.65	12588	34.53
2009/2010	11075	33.77	1087	1.54	487	2.90	12649	38.21



**Table 2 : Projected area, yield and production estimate of major crops for all seasons (2005- 2010)  
(Area in 000' ha, Yield in quintal /ha and Production in million tons)**

Production Season	Cereals			Pulses			Oil crops			Horticultural /Irrigated crops			Area
	Area	Producti vity	Production	Area	Productivity	Produ ction	Area	Productivity	Production	Area	Productivity	Production	
2004/2005	9053	14.35	12.99	1615	9.66	1.56	1223	4.17	0.51	367	42.23	1.55	23
2005/2006	9022	20.03	18.07	1702	9.96	1.69	1272	6.69	0.85	382	73.30	2.81	27
2006/2007	9035	22.91	20.70	1718	9.78	1.67	1271	6.61	0.84	413	72.40	2.98	28
2007/2008	9039	25.85	23.73	1721	12.92	2.22	1270	7.56	0.96	465	75.70	3.52	32
2008/2009	9153	31.57	28.90	1750	11.65	2.04	1274	7.85	1.00	372	66.94	2.49	39
2009/2010	9256	34.84	32.25	1689	12.61	2.13	1244	7.88	0.98	417	65.07	2.72	43

Production Season	Total		
	Area	Productivity	Production
2004/2005	12281	13.56	16.66
2005/2006	12404	18.92	23.42
2006/2007	12465	21.08	26.26
2007/2008	12527	24.36	30.51
2008/2009	12587	27.43	34.53
2009/2010	12649	30.0	38.21

## **2.2 Coffee, Tea & Spices Production**

Coffee, tea and Spices are important export products that have a huge potential of transforming the agriculture sector from subsistence to market-oriented mode of production. Cognizant of their importance for economic growth of the country,

Development priority has been given to significantly increase both volume and quality of production of these crops during PASDEP.

Production capacity of the country at the end of PASDEP on 2009/10 would increase from 301,000 tons to 419,000-ton clean coffee, 6,900 tons of tea and 210,175-ton spices. These represents 37%, 17 % and 254% increase, respectively, over the 2005/06-production volume. Emphasis will be given for post harvest activities such as processing to improve quality of the products, and accordingly 39 wet, 10 dry coffee processing industries and one single line tea processing factory will be established during the five years program. This will make the total number of industries 640 and 414 and 5 respectively.

**Table 3: Coffee, Tea and Spices Production Estimates**

	Units	2004/05	Production Year				
			2005/06	2006/07	2007/08	2008/09	2009/10
<b><i>Coffee Development</i></b>							
Planting	ha	500,000	60,000	69,000	30,000	35,000	40,000
Seedling Production	millions	121	120	207	90	105	120
Organic fertilizer	Ton	800,000	896,000	10,064,000	10,544,000	1,110,400	1,174,400
<b><i>Production</i></b>							
Production	Ton	301,344	305,000	313,344	332,246	386,948	419,610
Arrival to the central markets	>>	194,000	213,000	231,200	23,000	270,000	293,000
Washed Coffee	>>	36,000	44,000	60,000	63,000	69,000	75,000
Sun dried Coffee	>>	156,000	169,000	171,200	176,000	201,000	218,000
Tea Production	>>	5598	5900	6000	6220	6450	6900
Tea Processing Plants	No	4	4	4	4	5	-
<b><i>Spices Development</i></b>							
Pepper (Area)	ha	-	11623	13366	15638	18766	23082
Production	Ton	-	9298	16038	20329	30026	36931
<b><i>Ginger</i></b>							
Area	ha	5600	5696	6266	7081	8285	9859
Production	Ton	47600	48416	56390	84972	124275	167603
<b><i>Ginger</i></b>							
Area	ha	3420	4300	4945	5687	6540	7521
Production	Ton	1710	2150	3461	4265	4905	5641
Washed Coffee Processing Facilities	No	600	1	9	10	10	10
Sun dried Coffee Processing Facilities	No	391	3	5	5	5	5
<b><i>Tea Production</i></b>							
Area	ha	2680	2683	2874	3134	3446	3821
Existing Farms	>>	2680	2680	90	2990	3090	3090
New Farms	>>	-	-	50	150	300	500
Small-holder farms	>>	-	3	44	94	156	231

### **2.3 Improved seeds/planting materials**

The utilization of improved seeds for cereals, oil, pulse and fiber crops estimated to reach 1.8 million quintals and is assumed that the source of seed by the end of the planning period will be 15-20% from renewal rate, 10- 15% from local high yielding varieties and 65- 75% from provision of new improved seeds. The multiplication and distribution of improved seeds will be carried out by the ESE (85 %), farmers (10 %) and private companies (5 %) as well as importation. However, it is anticipated that the balance will shift to farmers and private companies (60 %) at the end of the 5-year period. In promoting the use of improved seeds, it is recognized that maximum care must be taken not to lose traditional genetic materials that have been developed and husbanded by farmers over a long time.

The amount of fruit planting materials or seedlings and vegetable seeds needed for the plan period would be 3.3 million pieces and 1,200qt respectively. Considering the absence of most of the improved varieties and poor capacity of propagation in the country, the main strategy to fill the gap will focus on importation of different forms of propagation materials from outside. In addition arrangements will be undertaken to involve private enterprises and state farms in production of already available varieties planting materials and supply them on contractual basis.

#### **Soil fertility**

Major increases in fertilizer consumption are needed to reach the levels of production foreseen during the PASDEP period both for food crops, and for fruits, vegetables, tea, coffee and spices. In total an estimated 8.2 million tons of chemical fertilizer and 12 million tons of compost will be required to meet the target production.

**Table 4: Inputs Supply**

Major Inputs	Activities	Units	Base Year 2004/05	Targets				
				2005/06	2006/07	2007/08	2008/09	2009/10
Fertilizer	1.1 Chemical Fertilizer	Tons	480000	600000	650000	700000	756000	820000
	• DAP	Tons	320000	340000	370000	400000	432000	470000
	• Urea	Tons	160000	260000	280000	300000	324000	350000
	1.2 Organic Fertilizer Supply	Tons	-	10000	10300	10700	11300	12000
Improved Seed	2.1 Improved Seed Supply by ESC							
	• From own Farm	Qts		727209	488079	359933	243289	144000
	• Farmers	Qts		391575	488079	539899	567675	576000
	2.2 Regional Seed Production	Qts		131622	34683	494908	664990	900000
	2.3 Private Sector Production	Qts		65810	83671	104980	145974	180000
	<b>Total</b>	Qts		1316216	1394512	1499720	1621928	1800000
Coffee, Spices & Tea	2.4 Coffee seed	Qts	400	400	690	300	350	400
	2.5 Spices Seed	Qts	-	240	277	322	21080	24952
	2.6 Tea Seedlings	No	500000	1900000	2800000	4900000	5500000	-

### Irrigation

With regard to irrigation the Government's strategy primarily focuses on water utilization at household level including traditional irrigation practices and water harvesting helping farmers build small and medium scale irrigation schemes on cost recovery/sharing basis, and construction of some multi purpose dams, that would support large scale irrigation.

To increase irrigation efficiency and to enhance productivity of cultivated crops appropriate and affordable technologies such as low cost drip-irrigation, equipments and techniques ideally suited for use by poor, smallholder farmers will be introduced and promoted. Furthermore, training of professionals at all level will be conducted to realize the irrigation program's interventions and to maximize the output.

## 2.4 Pest management

One of the main reasons for low agricultural production is the severe damage caused by various types of plant pests such as insects, mites, diseases, weeds and vertebrate pests like rodents and birds. Average crop loss due to these pests during the pre-harvest period is estimated at 30% or even higher, depending upon pest severity and extent & success of plant protection measures applied. Post-harvest crop loss is also estimated to be 15%. During the plan period pre-harvest loss will be reduced to 25% and Post-harvest loss to 10%.

Interventions during PASDEP include:

- **capacity building** through training of farmers on pests and plant protection measures raising the professional strength of crop protection personnel at all levels improving laboratory facilities technical equipment for rendering the required effective services;
- **Development of pest monitoring and early warning system** establishing field monitoring stations, strengthening pest trap sites, deploying pest monitoring staff/scouts;
- **Establishment of information networks** to track pest development to communicate to appropriate federal and regional authorities for appropriate action;
- **Field surveys and pest control operation** to ensure readiness to act against any threatening pest situation through procurement and storage of pesticide and spraying equipment in advance, and ensuring availability of logistic support:
- **promoting integrated pest management**, which is both less costly and more environmentally-friendly;
- **Plant quarantine and inspection service: - establishing** and/or strengthening quarantine stations to monitor and control pest movement at entry points;
- **Harmonization of Regulations.** For plant quarantine, pesticides registration and control of bio-pesticide.
- **Post-harvest loss management: -** developing and disseminating extension packages and promoting improved storage structures and practices.

## **2.5 Livestock production and health services**

By far the largest proportion of the crops produced in the country has livestock input in terms of farm power. Lack of an ox is considered as a very strong indicator of poverty among rural households. Farmers use livestock for coping adverse situations during crises of crop failure; and livestock also provide transport in both rural and urban areas. However, the traditional tendency to ignore the input of livestock in crop production and bias towards crop development still persists. With regard to direct food supply and/or cash income generation, livestock will play an increasingly significant role in the PASDEP program.

Small ruminant production will receive special attention in areas characterized by high population, highly fragmented land holding, land degradation and arid climate. Poultry production will be developed in all mixed agriculture as well as in agro-pastoral areas. Owing to their ability to provide economic return in a relatively short time, provide products like milk and egg for a longer period of time, their relatively small space and initial capital requirement, small ruminants and poultry have a comparative advantage to contribute towards poverty alleviation of most small holder farmers.

Total meat production is projected to increase by 48 % in the coming 5 years (from 566,000 ton in 2005 to 837,000 ton in 2010) while the production of milk will increase by 85% (from 1,831,200 - 3,391,000 ton). Production of skin & hides, egg, fish, honeys and cocoon (silk), are targeted to increase by 19%, 80%, 170%, 158 % and 4185% respectively.

The main inputs that will be employed to attain the above target are increased availability and quality of animal feed, animal health service, improved management, and genetic improvement.

### **Animal Feed**

Animal Feed is currently one of the four inputs that ranks top in limiting animal production. Various strategies such as expansion of improved pasture, improvement of the quality of crop residue, bush clearing, forage seed production, and water development will be implemented to address the problem of feed availability and quality.

The existing area of improved natural pasture and forage development will be increased by 75% (20,000 ha to 35,000 ha.) and 77% (70,000ha. -124,000 ha) respectively. To improve feed quality treatment of crop residue with urea and molasses will be introduced and 7,326 tons of crop residues will be treated over the five years reaching 1,757 tons in 2010. For this purpose, 100 molasses tankers will be constructed all over the country during the five years. Clearing bush land is another strategy that will be implemented to improve feed availability in the pastoral areas 6000 hectare of land currently covered by exotic and invasive bush trees will be cleared. During the plan period 1096 tons of seed, 20 million seedlings and 10 million cuttings will be distributed to the farmers.

Farmers in the mixed agriculture areas will be encouraged to grow perennial forage plants in their backyard, around their plots and on soil bands that are built to control erosion as well as on non-farm lands delineated for natural resources conservation. Communal grazing areas will be divided amongst farmers in a way similar to farmland. They will be managed individually to exclusively grow forage. Productivity of these lands will be improved by sowing them with improved seeds.

In addition to promoting apiculture and forage production in all mixed agriculture and agro-pastoral areas, special attention will be paid to integrate apiculture and forage development with rehabilitation of degraded areas. Including allowing farming communities to grow forage plants and/or undertake apiculture development. As appropriate, in areas that is otherwise closed for any other agricultural activity. This will boost agricultural production while at the same time ensuring the sustainability of the rehabilitation intervention.

Sericulture will be developed to help households generate additional cash income. Varieties of mulberry plant required to feed the silk worm will be multiplied and disseminated from Alage ATVET College. Appropriate variety of silkworm will also be imported and multiplied in the same college from which it will be disseminated to the various regions.

Fish production from existing lakes will be improved simply by introducing and effectively implementing lake management plans. Fish farming will be integrated in ponds and reservoirs created primarily for other purposes.



## **Livestock Management**

The key strategy with regard to management will be the promotion of zero grazing in the mixed agriculture areas. Introduction of zero grazing practice in the mixed agriculture areas combined with increased availability and quality of animal feed, animal health service and water a broad-based impact on household productivity and cash incomes and ultimately on poverty reduction. It will also have a synergistic effect on animal disease control and environmental rehabilitation. Animals will be kept in the back yard and their owners will fetch them the feed and water they require. Water development, is, therefore, a very important component that will receive emphasis.

### **Animal Health**

A number of infectious, parasitic and zoonotic diseases existing in Ethiopia pose huge economic loss and cause for the repeated trade bans that the country is facing now. In addition to this 180,000-200,000 sq. km of fertile land is unavailable for livestock and crop production due to tsetse fly infestation and trypanosomes. To reduce the impacts resulting from livestock disease, the newly formulated animal health system will be fully implemented over the next five years.

### **Major Intervention areas**

#### **a) Control of Trans-boundary and Other Important Diseases:**

Five trans-boundary animal diseases namely Foot and Mouth Disease, Contagious Bovine Pleuro Pneumonia, Pest des Petit Ruminants, Contagious Caprine Pleuro Pneumonia and African Horse Sickness will be prevented and controlled through vaccination.

#### **b) Tsetse fly and trypanosome prevention and control**

Suppression of tsetse flies and trypanosome will be pursued in an area of at least 85,000 km.

#### **c) Establishment of livestock disease free zone**

Eradicating diseases from the whole country is expensive, time consuming and is also difficult if not impossible to achieve. The best available option that a number of countries are making use of is establishing disease free zone. Therefore, in the coming 5 years it is planned to establish a disease free zone.

**d) Control of external parasites of sheep and goats**

To reduce the rate of downgraded skins from the current status of 40-50% to 5%, control of external parasites particularly mange mites in sheep and goats will be carried out at least in three regions (Amhara, Tigray and Afar), which are affected more severely.

**e) Investigation and control of newly emerging camel and poultry diseases**

- Aggressive work will be undertaken to understand the cause and solutions to
  - i) The unknown camel disease that has resulted considerable fatalities in camels of Afar, Somali and other nearby areas since the last 4 to 5 years.
  - ii) The recently reported exotic poultry diseases such as Gumboro and Mareks
  - iii) Measures will be undertaken to be able to the possible introduction of Highly Pathogenic Avian Influenza (HPAI) and to limit its spread in case of its occurrence.

**f) Improving supply and quality of vaccines**

- The current production of 16 types of vaccines will be increased to an amount of 950,700,000 doses at the end of the fifth year and 91,800,000 doses of 7 types of vaccines that are not produced in the country at the moment will be produced at the end of the fifth year.

**g) Strengthening animal health information exchange.**

- By making use of modern technologies the current reporting rate is targeted to be increased from today's 40% to 80% at the end of the fifth year.
- The number of diseases for which extension materials will be prepared is expected to reach 12 from the current status of zero and
- The percentage of rural population, which is given basic animal health education, will be increased from less than 5% to 50%.

**h) Strengthening diagnostic and surveillance capacity of laboratories**

- The number of diseases surveyed will reach to 6 from the current status of 1.
- The amount of samples tested per annum is targeted to 2.9 million from the present status of 95,000 samples.

**i) Strengthening field veterinary services**

- As the implementation of the veterinary service delivery system will be strengthened the animal health coverage is expected to reach 80% from the current status of 30%. This will be achieved by growing the number of veterinary clinics from 1587 to 3600, mobile service delivery units from zero to 100 and trained community animal health workers from 1500 to 3000.

**j) Strengthening the quarantine and inspection service.**

- The number of quarantine station will be increased from 3 to 11, check posts from 3 to 12 and domestic abattoirs from 140 to 321.

**h) Quality control of animal products and biological.**

- A vaccine quality control unit will be established, the end of the fifth year all vaccines produced in the country as well as imported will be certified; by the end of the fifth year 5 veterinary laboratories are expected to take part in food quality control compared to the current status of zero.

**i) Human resource development.**

- The number of animal health assistants will increase to 6000 from 800, senior meat inspectors to 684 from 50, junior meat inspectors to 519 from 160, senior laboratory technicians to 179 from 47, junior laboratory technicians to 194 from 55 and post graduate veterinarians to 500 from 60.

Since the livelihood of the pastoral population is exclusively dependent on livestock, and their agro-ecology is highly prone to recurrent drought, special attention will be paid to establish livestock early warning system that will include livestock marketing and maintenance of strategic size breeding stock of each livestock species. This will be implemented in addition to the interventions regarding improvement of feed availability and quality, improved animal health

service and genetic improvement interventions, which will have a national coverage.

### **Genetic Improvement**

Genetic improvement of large and small ruminants mainly focus on the improvement of indigenous species in their local breeding track/area using selective breeding for pure breed improvement and cross breeding with known exotic breeds to improve milk and meat productivity. The major implementation procedures are redefining the breeding objectives of the existing ranches into open nucleus breeding centers and, the establishment of new nucleus herds and flocks for the production of male breeding animals for use in AI service and natural mating as appropriate for each species.

- **Major intervention areas**
- a) **Redefining the breeding objectives of nucleus breeding unit of the existing Fogera and Boran Cattle breed ranches to turn in to efficient nucleus farms**
  - Efficient recording and selection program will be implemented to produce males for breeding.
- b) **Establish Horo & Begait cattle nucleus breeding centers in their local environment to produce breeding males.**
- c) **Import Holstein and Jersey exotic breeds for strengthening/breeding the genetic bases of the existing nucleus farms of these breeds.**
  - Holstein Frisian for Holeta bull dam genetic improvement farm (300 in calf heifers, 5000 semen doses)
  - Jersey for Wolaita Sodo Genetic improvement center. (200 in calf heifers, 2500 semen doses Jersey semen)
- d) **capacitating NAIC for bull-sires semen production and establishment of regional new semen production stations.**
  - NAIC will be capacitated to produce bull-sire semen from the Holstein Friesian & Jersey cattle breeds and the four major indigenous breeds namely Boran, Fogera, Horo & Begait

- Four semen production stations will be established at Baher dar, Assela, Wolaita Sodo & Mekele to produce semen for field service use from crossbred bulls and indigenous bulls of appropriate breeds in their respective area.
- e) Establish indigenous sheep & goat improvement centers for production of breeding rams.**
- Four nucleus sheep flock will be established for four breeds in their local area (Black-head, Adal, Dangla and Bonga Breeds) for rams production
  - Five nucleus goat flocks will be established for five breeds (Somali, Keffa, Afar, Highland and Bagait Breeds) in their local environment for breeding bucks production.
- f) Importation of exotic improved sheep & goat breeds for cross breeding.**
- Two crossbred rams production centers will be established and 360 exotic breed males and females (Dorper and Awasi breeds) will be imported to enhance the crossbred rams production
  - Five Boier goat cross breeding centers will be established to produce crossbred rams for breeding
- g) Importation of sheep & goat semen**
- 5000 doses of the above mentioned exotic sheep and goat breeds will be imported for use in the cross breeding centers.
- h) Establishment of community based breeding program in organized co-operatives.**
- Minimum of 4 adjacent Kebles in five regions forming a common breeding program with a minimum recording activities for selection of bucks, rams and bulls for common use and castration of unwanted males.

**Table 5 - Livestock Products Targets**

Products	Years					
	2005	2006	2007	2008	2009	2010
<b>Meat Production in ton (000)</b>						
Cattle	327	331	336	340	463	469
Sheep	87	88	88	89	121	123
Goat	80	81	82	82	112	113
Camel	20	20	21	21	29	30
Poultry Local	52	57	61	66	95	102
Poultry improved	6	7	8	8	9	10
<b>Sub Total</b>	<b>566</b>	<b>577</b>	<b>587</b>	<b>598</b>	<b>821</b>	<b>837</b>
<b>Hide and skin (in million)</b>						
Hide (Cattle)	3	3	3	3	4	4
Sheep	9	9	9	9	10	10
Goat	9	9	9	9	10	10
Camel	0.14	0.15	0.15	0.15	0.20	0.20
<b>Sub Total</b>	<b>21</b>	<b>21</b>	<b>21</b>	<b>21</b>	<b>25</b>	<b>25</b>
<b>Egg Production</b>						
Poultry Local ton(000)	16	18	19	21	28	31
Poultry improved	3.7	4.0	4.3	4.7	5.1	5.5
<b>Sub Total</b>	<b>20</b>	<b>22</b>	<b>23</b>	<b>25</b>	<b>34</b>	<b>36</b>
<b>Milk Production ton (000)</b>						
Cattle (Local)	1483	1503	1877	2466	2825	2452
Cattle (Improved)	9	418	424	429	435	440
Goat	50	50	51	51	90	91
Camel	289	293	296	299	404	408
<b>Sub Total</b>	<b>1831</b>	<b>2264</b>	<b>2648</b>	<b>3246</b>	<b>3753</b>	<b>3391</b>
<b>Fish production '000 tons</b>						
1. Lakes	9.0	10.0	12.0	14.6	16.8	19.3
2. Rivers	0.1	0.1	1.3	2.0	2.6	3.4
3. Existed SWB and reservoirs	0.9	1.5	1.7	1.9	2.0	2.4
4. New Water Bodies	0.0	0.0	0.0	0.8	1.3	2.0
5. Aquaculture	0.0	0.0	0.0	0.0	0.1	0.1
<b>Sub Total</b>	<b>10</b>	<b>12</b>	<b>15</b>	<b>19</b>	<b>23</b>	<b>27</b>
<b>Honey and beeswax production</b>						
Honey in 000 tons						
Frame hive	8	16	23	31	38	42.8
Transitional hive	9	15	21	26	32	35.5
Traditional	21	21	20	19	19	20

<b>Products</b>	<b>Years</b>					
<b>Meat Production in ton (000)</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
<b>Sub Total</b>	<b>38</b>	<b>51</b>	<b>64</b>	<b>76</b>	<b>89</b>	<b>98.6</b>
<b>Beeswax</b>						
Frame hive	0.0786	0.1551	0.2314	0.3077	0.3840	0.428
Transitional hive	0.8800	1.4660	2.0520	2.6380	3.2240	3.546
Traditional hive	2.1310	2.0640	1.9970	1.9300	1.8630	2.038
<b>Sub Total</b>	<b>3.0896</b>	<b>3.6851</b>	<b>4.2804</b>	<b>4.8757</b>	<b>5.4710</b>	<b>6.012</b>
<b>Sericulture Production</b>						
<b>Dry cocoon in ton</b>	<b>0.7</b>	<b>1.5</b>	<b>3</b>	<b>27</b>	<b>28</b>	<b>30</b>

**Table 6: Targets on Improvement on productivity of animals**

<b>Type of product</b>	<b>2005</b>	<b>2010</b>	
		<b>National Average</b>	<b>In specialized high potential areas</b>
<b>Carcass wt/local animal (kg)</b>			
<b>Cattle</b>	<b>110</b>	<b>120</b>	<b>160</b>
<b>Sheep</b>	<b>10</b>	<b>12</b>	<b>14</b>
<b>Goat</b>	<b>9</b>	<b>11</b>	<b>13</b>
<b>Camel</b>	<b>140</b>	<b>145</b>	<b>150</b>
<b>Chicken</b>	<b>0.6</b>	<b>0.8</b>	<b>1</b>
<b>Milk/ animal</b>			
<b>local cattle</b>	<b>1.5 liter/day</b>	<b>4 liter/day</b>	<b>5liter/day</b>
<b>Improved cattle</b>	<b>9 liter/day</b>	<b>9 liter/day</b>	<b>12 liter/day</b>
<b>Goat</b>	<b>0.5 liter/day</b>	<b>1 liter/day</b>	<b>2 liter/day</b>
<b>Camel</b>	<b>1500lt/lactation</b>	<b>2000lt/lactation</b>	
<b>lactation days of local cattle</b>	<b>180/year</b>	<b>240/year</b>	
<b>lactation days of improved cattle</b>	<b>300/year</b>	<b>300/year</b>	
<b>Egg #/bird</b>			
<b>Local</b>	<b>50/year</b>	<b>70</b>	<b>90</b>
<b>Improved</b>	<b>140</b>	<b>150</b>	<b>210</b>



## **2.6 Natural Resource Management**

The management of natural resources will be effective when planned and implemented on the basis of watershed principles. This calls for the integrated development and utilization of the resource bases (Land, soil, water and forest) to enable transition to improved livelihoods. Major activities among others include sustainable land use and forests development water management for irrigation development, soil and water conservation, and sustainable land use and forest development.

### **2.6.1 Sustainable Land use Management**

To develop and strengthen the natural resource information system database will be established at woreda level. The plan during the five years period encompasses the establishment of the natural resource database in 550 woredas.

To utilize the natural resources in sustainable manner proper land-use plan will be prepared by analyzing the suitability of land in 18 watersheds during the PASDEP period.

So far land registration has been completed for about 6.2 million households and they have received 1st level certificate. (2,484,693 households in Oromia, 2.4 million HH in Amhara, 632,000 households in Tigris and 700,126 households in SNNPR). In the next 5 years the remaining 6,8million households will receive 1st level certificate; and in four regions(Amhara, Oromia, SNNP and Tigris) 2nd level certificate with cadastral map will be issued for about 1,000,000 HH in pilot project areas of the four regions.

Studies and research will be conducted in the next 5 year in pastorals and Agro-pastoralist area of the country which focus on the identification of the property rights and the development of methodological to record these rights.

### **2.6.2 Water Management for Irrigation**

During PASDEP a major effort will be made to promote and strengthen small-scale irrigation schemes (river diversion, micro-dam construction, ground water abstraction, etc.) for supplementary and double cropping, through provision of technical and material support for expansion and

improved water use efficiency. The program will also include strengthening water harvesting and utilization practices through provision of appropriate technologies. In this regard, 470,000 water-harvesting structures will be constructed during 2005/06 – 2009/10 periods, which develop nearly 58,750 hectares as micro irrigation.

Small-scale irrigation is one of the means of achieving food security. Hence, emphasis is given to this sector to cover up to 397,000 ha during this planning period. This will bring the total area under small-scale irrigation from the present 98,600ha. To 487,000ha. Both water harvesting and small-scale irrigations will be implemented mainly in moisture deficit areas.

The extension and training programs will pay particular attention to enhance farmer's capacity to use water resources efficiently, and help to build the community-level institutional structures necessary for effective irrigation management through provision of credit service where appropriate.

In addition, where there is a comparative advantage the Government will promote and strengthen medium-and large-scale irrigation. Plans during the PASDEP period include, construction of 24 identified projects covering an area of 322,630 ha., the feasibility study and design of 19 projects covering an area of 229,149 ha. And pre-feasibility of seven others covering 117,116ha.

### **2.6.3 Soil and Water Conservation**

Interventions in area enclosures aim at restoring the productivity of degraded lands through activities encompassing closing the degraded land from human and livestock interferences and exercise measures that enhance rehabilitation processes. It is planned to implement 693,000 hectare of area closures during the planning period.

Soil conservation activities are the basis for conservation based resource management for agricultural development. Focus will be given on controlling soil erosion losses from cultivated lands with varying slopes ranging from gentle to steep slopes through the use of proven structural and biological measures. Soil fertility enhancing measures, which include

among others, compost making, and green manuring will be given emphasis. The various practices of SWC will be implemented on mid and high lands, which have no moisture stress. The total plan is to achieve 2.1 million ha of land with SWC measures.

The practice of moisture retention structures with improved land husbandry will take place on 6.2 million ha. Major activities include runoff farming, floodwater farming and in-situ moisture retention techniques.

The soil moisture retention measures will be implemented on 2.5 million hectares in areas receiving very low rainfall (Semi-arid and arid lands)

#### **2.6.4 Forest Resource Management**

At present, about 4.1 million hectares of relatively dense forest (3.56%) of the country is available. During the coming 5 years about 4.7 million hectares of degraded areas will be covered, which is about 5% of the total area. At the end of the planning period the total forest area of the country will increase from 3.56% to 9%.

The program will include surveying and mapping of 1.44 million ha to show the extent and spatial distribution of the dense forests as well as to determine its capacity and implement a sustainable management plan.

In order to promote and strengthen tree-planting activities, 2600 quintals of multipurpose tree seeds will be collected in the country and purchased from abroad and distributed to the households/communities during the planning period. To support this program five tree seed centers will be established in the planning period.

#### **2.6.5 Wildlife Protection, Development and Utilization**

Among others the economic value of wildlife is a significant one. Thus, much emphasis will be paid to develop wildlife-based tourism and promoting other wildlife utilization aspects. This is achieved by properly protecting and developing the country's wildlife resources.

Efforts will be made to strengthen 20 existing wildlife protected areas and two wildlife ranches/farms. In five years time two community conservation sites will be established. Management plans will be prepared for 16 protected sites. In order to enhance wildlife based tourism,

infrastructures will be developed for 12 sites. Better wildlife protection, development and utilization will be achieved through promotion of conservation education and awareness creation for 100,000 people.

#### **2.6.6 Biodiversity Conservation and Sustainable Utilization**

Biodiversity is a source of essential inputs for agricultural development and provides a multitude of choices and means for dealing with natural and man-made environmental disturbances. It is a security for improved livelihood and a foundation for our Agriculture led Industrialization Strategy. Biodiversity conservation and sustainable utilization amplified by technologies generated through research, and put into practice to accelerate socio-economic development, should form the bases for perpetual food security and improved livelihoods. IBC has been conserving biodiversity for two principal reasons: to ensure their continued existence and to prepare them for research and development. These efforts will be strengthened, reinforced and expanded to effectively support food security and livelihood programs during the PASDEP in synchrony with the development plans of the various pertinent stakeholders in the Ministry of Agriculture and Rural Development.

7700 species of high economic value will be characterized, popularized for researchers and other users. 6500 species: high economic value, endemic and endangered will be conserved. One duplicate gene bank, 10 field gene banks, 15 community gene banks and 14 in-situ conservation areas will be established during the plan period.

**Table 7 : Natural Resources**

---Link to MDGs	Out come/out put	Formulation of Indicators	2004/05 Base year	Planned targets					Total
				2005/6	2006/7	2007/8	2008/9	2009/10	
	<b>Out come</b>								
MDG1	1. Increased rural incomes and agricultural production								
	<b>out put</b>								
MDG1	1.1. Sustainable land use management put in place	Establishing natural resources database at woreda level (No.)		55	110	220	165	—	550
		Issuance of first level land certificate (Million No.)	6.217	1.121	1.357	1.214	1.656	1.435	6.783
		Issuance of second level land certificate (million No.)	—	0.150	0.185	0.175	0.263	0.227	1.000
		Proper land use management practices developed at watershed levels (No.)		2	3	3	5	5	18
MDG1 & 2	1.2. Water resource management for irrigation Enhanced	Area to be developed by small scale irrigation in (000' ha)	98.63	283	317	379	436	487	487
		Area to be developed by medium & large scale irrigation in (000' ha)	98.63	55	57	60	75	76	323

		Area to be developed by water harvesting structures (000ha.)	700	6.97	9.25	11.64	11.64	19.25	58.75
MDG1	1.3. Soil and water conservation activities enhanced	Highly degraded area under area closure annually (000 ha)	1500	83	111	138	139	222	693
		Area to be under soil conservation measures annually (000 ha)	825	249	332	415	415	665	2076
		Area to be under moisture conservation measures annually (000 ha)	1675	290	390	530	540	790	2500
		Area to be benefited from soil fertility activities in (000' hectares)	-	748	997	1246	1246	1994	6231

Link to MDGs	Out come/out put	Formulation of indicators	Base year	Planned target					Total
				2005/6	2006/7	2007/8	2008/9	2009/10	
MDG 1 & 7	1.4. Forest resources management developed.	Forest areas that will be surveyed and mapped (000' ha)		185	247	308	308	493	1541
		Land to be covered by multipurpose trees (000' ha)		567	756	945	945	1512	4725
		Tree seed that will be collected and distributed (quintals)		500	515	520	520	525	2580
		Tree seed centers that will be established (No.)	—		2	3			5

<b>Links to MDGs</b>	<b>Outcome/output</b>	<b>Formulation of Indicators</b>	<b>2004/5 Base Year</b>	<b>2005/6</b>	<b>2006/7</b>	<b>2007/8</b>	<b>2008/9</b>	<b>2009/10</b>	<b>Total</b>
	1.5 Wildlife conservation and utilization will be enhanced	Strengthening the existing wildlife protected areas and establishing new ones.							
		- Number of new parks to be established.	3	-	1	1	-	-	2
		- Number of protected areas in which infrastructures will be developed	-	2	2	4	4	4	16
		- Number of reserves to be upgraded	-	-	1	1	1	1	4
		- Number of management plan to be developed	-	3	3	3	3	4	16
		- Number of trans- boundary park to be established	-	-	-	-	1	1	2
		Assist and promote establishment of wildlife ranches							
		- Number of wildlife farms to be strengthened		-	1	-	-	1	2
		- Number of weredas where wildlife ranches will be established		1	2	2	2	2	9
		Number of wildlife based tourism sites that will be promoted and strengthened		2	2	2	3	3	12
		Promoting wildlife public conservation and awareness creation in (000' people)		12	16	20	20	32	100
		Establishment of community conservation sites(No.)		-	1	-	1	-	2



<b>Link to MDG</b>	<b>Sector/ Sub sector</b>	<b>Outcome/ Output</b>	<b>Indicator</b>	<b>2005/6 (Base year)</b>	<b>06/07</b>	<b>07/08</b>	<b>08/ 09</b>	<b>09/ 10</b>	<b>Total</b>
MDG 1,7& 8	1.6 Biodiversity conservation and sustainable utilization	Accelerated biodiversity conservation and utilization in sync with agricultural development and improvement frameworks	Number of species characterize, popularized and made available for research and other uses	70000	200	2000	2500	3000	7700
			Number of species conserved: economical, endemic endangered	62000	1000	1000	2000	2500	6500
			Number of duplicate gene bank established	1	-	-	1	-	1
			Number of field gene banks established	4	2	2	3	3	10
			Number of community gene banks established	12	-	5	5	5	15
			Number of in situ conservation areas established	7	1	3	5	5	14

## **2.7 Agricultural Extension and Research**

### **2.7.1 Agricultural Extension**

The transformation of Ethiopian agriculture from its current subsistence orientation into market oriented/commercial production system forms the basis of the agricultural development strategy of the Government. To help achieve this extension service is being strengthened through various means. The number and education level of Development Agents is being increased significantly through the operation of Agricultural Technical, Vocational and Educational Training program and to transfer improved agricultural technologies and give adequate services at a closer reach thousands of Farmers Training Centers (FTCs) have been established and are being established.

#### **2.7.1.1 The TVET Program**

In a situation where many of the farmers are illiterate, acquiring and sustaining competence in production, adding value and marketing will be difficult. Cognizant of this fact, the Government's response to the challenges of agricultural transformation and rural development for poverty reduction among others rests on providing extensive Technical, Vocational Education and Training in agriculture. For which 25 TVET colleges have been established.

During the first phase of the program it was planned to train 55,000 Development Agents of which, 45,000 will be placed at 15,000 FTC's to provide direct support to farmers; 5,000 will provide veterinary service, and 5,000 will support cooperatives. To date a total of 23,378 students have been graduated and assigned at FTC in all regions. Since the total number of peasant Associations have increased from 15,000 to 18,000 the total number of FTC will increase from 15,000 to 18,000. Accordingly additional 9,000 DAs, 1000 animal health workers, 1000 cooperative workers are required. This will bring the total number of trainees to 42,622. The 1<sup>st</sup> phase programme will be in the year 2008/2009.

### 2.7.1.2 FTC Program

The core functions of FTCs will be provision of extension services through training and demonstrations and also serve as information and exhibition centers. The training given by the centers includes entrepreneurship skill development to produce business-oriented farmers. 5,493 farmers training centers have been completed and are ready to begin service. During the planning period it is envisaged to construct 12,507 FTCs, bringing the total number of FTCs to 18,000 by 2010. In the coming five years these FTCs will be equipped with all the necessary facilities such as teaching materials, workshop implements, computers connected with word processing program etc. The training at the FTC will focus on two major categories: modular training, and farmers training on agricultural extension packages

- a) Extension package training: Training on Agricultural Extension Package is short-term training provided to all farmers for mass mobilization in the area of agricultural extension package programs, which includes minimum and household packages. For the implementation of the minimum package training each FTC will give training to 190 farmers' annually in four rounds and 10,393,380 farmers will have access to such training at the end of the planning period. Similarly each FTC will give training and intensive extension services to 50 farmers in the household extension package program annually. At the end of the 5<sup>th</sup> year the total number of farmers participating in the program will be 4.5 million farmers.
- b) Modular training : Modular training is specialized training for farmers above 4<sup>th</sup> grade education working in agriculture with their families and farmers currently involved in agriculture owning land. Each FTC will train 60 trainees in one round per year for a period of three months (two days in a week) and the total number of farmers trained over the planning period will be 2,952,540.

With regard to the extension service it is envisaged that all farmers will have access to agricultural extension services during the PASDEP period. The approach will be through organizing farmers into groups and the group leader will serve as a contact farmer. The pastoral mobile extension service will follow the seasonal movement

of the pastoral communities based on wet season, dry season grazing areas and base camps.

All agricultural extension activities will give due emphasis to gender integration. Agricultural training and agricultural extension service will identify activities that will benefit both women and men. Throughout the planning period all of the female headed households estimated at 2.69 million will access extension services and an estimated 30 % of the women in male headed households will also get access to training and extension services in the type of extension Packages that will benefit them.

### **2.7.2 Strengthening Research-Extension-Farmer Linkage Council**

Research, extension, farmers and all concerned stakeholders will work jointly for effective technology generation and promotion. This will be achieved by employing more efficient linkage strategies, which will bring together all stakeholders in the integrated process of technology generation, development, transfer, utilization and feed back. The council will meet two times a year to review the performance of executed research and extension programs; it ensures the effective communication, efficient utilization of resources and proper implementation of research-extension-farmer linkage, recommend policies, and other functions related to the research-extension-farmers linkages and the operation of research system and agricultural extension services.

### **2.7.3 Agricultural Research**

Based on the agricultural sector development direction stated on the Agriculture and Rural Development Policies, Strategies and Techniques document; the Ethiopian Institute of Agricultural Research is working to increase the income of farmers and pastoralists and to improve their livelihood and also to produce agricultural technologies that can contribute to the protection of natural resources for sustainable development by focusing on crops that can make the country competitive on the international market. Accordingly, in the effort to eradicate poverty and

ensure rapid and sustainable development from 2006 to 2010, it is designed to produce and distribute different technologies to end-users of the three development potential areas (adequate rainfall areas, moisture stress areas, and pastoralist areas) through local research works and adopted technologies. Based on this, the following outcomes are expected from researches conducted under different disciplines by the Institute.

In the crop research sector, 25 crop varieties for adequate rainfall areas, 17 crop varieties for moisture stress areas, and 13 crop varieties for irrigated areas will be adopted in the five-year plan. These adopted varieties are cereals, pulses, oil crops, fiber crops, vegetables and flowers, spices, root and tubers, and tea. Moreover, 16 crop varieties for irrigated areas, 57 for adequate rainfall areas, 28 for moisture stress areas, and 6 for spring farming are to be released. In addition to this, 106 crop protection and 54 crop management technologies are included in the plan. Besides, technical manuals will be prepared on cereals, pulses, oil crops, vegetables and fruits, tea and aromatic and medicinal plants (Annex 2).

In animal research sector, four chicken varieties will be produced for adequate rainfall areas and moisture stress areas. Moreover, two incubators, which are operational without electricity, will be developed. Using a floating hive technology, tilapia fish species development technologies will be adopted. Through local research, 23 technologies on animal nutrition and 11 information packages on honey and honey products will be released for adequate rainfall areas. Regarding animal health, two technologies for adequate rainfall areas, three technologies for adequate and moisture stress areas and eleven technologies for the three development potential areas (16 technologies in total) are intended to be developed. In addition, 5600 sample tests will be conducted on exportable animal and animal products and on contagious diseases. One sheep variety will be released for adequate rainfall areas. Four technology information packages that help to keep the quality of hides and skin and meat yields of sheep, goats and cattle will be released for the three development potential areas. In fish farming, two fish feeding and farming system technologies will be developed locally. In fish limnology, 12 information packages will be produced for adequate and moisture stress areas; 7 information packages will be produced on fish limnology for three development

potential areas. Eight information packages on milk and milk products and dairy cattle rearing and management will be produced for adequate rainfall areas. In addition, 7 information packages on draught power of animals and efficiency of farming will be produced with local research for adequate rainfall areas (Annex 3).

In pastoral and semi-pastoral areas, three crop varieties, which are drought-tolerant and high yielding, will be adopted and 24 varieties be produced locally. Moreover, 10 management and plowing methods, 5 rainfall forecasting models and different maps will be produced. Seven varieties of feed and two feed management technologies will be produced. Besides, six different technologies will be produced on animal management and rearing (Annex 4).

In soil research sector, five different technologies will be from abroad for adequate rainfall areas. Forty-four different information packages introduced for adequate rainfall areas and eight information packages for moisture stress areas will be produced. Moreover, 27 information packages will be produced locally for irrigation areas. In general, the information for this research sector include generating fertilizer (focusing on the main crop types), collecting data to know the area coverage of acidic soils and providing alternative solutions to amend acidic soil problems, finding better mechanisms to ameliorating soil salinity problems, determining amount of irrigation water and frequency of irrigation, soil and water conservation methods, drainage management, water harvesting techniques, and analyzing chemical contents. Moreover, soil maps will be prepared for three moisture stress and nine adequate rainfall areas research centers (Annex 5)

In forestry research sector, eight tree species will be identified for adequate rainfall areas using adopted technologies. Suitable tree types, technologies, and information will be produced for 63 adequate rainfall areas, 16 moisture stress areas, and, 6 pastoral areas (Annex 6)

In agricultural biotechnology sector, 16 rapid multiplication protocols will be produced for coffee, pineapple, hale, hot pepper, cassava, vanilla, potato, enset, geranium, pyrethrum, citrus, banana, and garlic. In embryo transfer, two technologies helpful for the rapid multiplication of hybrid cattle will be produced with research. In addition, two soil improvement

technologies to improve production with rhizobium bacteria will be produced through research. In connection with this, 7.3 million pineapple seedlings, 3.1 million coffee seedlings, and 0.6 million potato seedlings will be multiplied, and 4.1 kg inoculants (for bio-fertilizer) will be prepared (Annex 7)

In agricultural mechanization, one technology for adequate rainfall area, one for moisture stress areas, and six for both areas will be produced locally. One technology will be produced for pastoral areas. Moreover, two technology catalogues (containing specification, user manual, and price) will be prepared and distributed to the end-users in the three development potential areas (Annex 8).

In food science and post-harvest technologies, 13 technologies for all users in child food processing techniques, preservation techniques for vegetables and fruits, and food quality indicators will be expected to be produced (Annex 9)

In socioeconomics research sector, 6 information packages on agricultural technology extension, 4 on natural resources and agricultural production method, 11 on agricultural market, and 6 on the agricultural system will be produced. From the information, policy or other alternative solutions mainly on the basis of constraints for the agricultural system, issues that have impact on technological extension, the impact of technologies, and the indicators of the agricultural market will be generated (Annex 10)

By multiplying crop technologies, 2500 q basic seeds, 4850 q pre-basic seeds, and 902.5 q breeder seeds will be produced for irrigated areas. Similarly, 39262 q basic seeds, 19286 q pre-basic seeds, and 1375 q breeder seeds will be produced. Moreover, 100,000 cuttings, 100,000 planting materials and 100,000 seedling fruit varieties, 50,000 coffee seedlings and 45 seedlings (cuttings of pre-basic seeds) and 6500 seedlings (cuttings of basic seeds) will be multiplied from aromatic and medicinal crop varieties. In relation to this, by multiplying improved animal technologies, crossbred heifer, bull, fish, and chicken pullet will be distributed for adequate rainfall areas; and 112,700 fertilized eggs will be multiplied. Further more, 46 t forest tree seed, 40,000 kg seed (collected from 40 indigenous and foreign tree varieties) and 57,500 tree seedlings will be distributed to users. Forty hectares of forest seed source is

established to collect improved and quality seeds. Besides, from technologies produced in agricultural mechanization research, three to five samples will be prepared for five technologies (Annex 11).

Before extensive dissemination of research outputs, the efficiency of 150 technologies will be evaluated and transferred in adequate and moisture stress areas. Training will be given to about 10,956 professionals, development workers and farmers on improved agricultural technologies. Moreover, 139 agricultural extension materials, guides, and brochures will be prepared and distributed. Experience and information exchanges and consultations will be held among stakeholders. In addition to this, six training and demonstration activities will be given on different food processing technologies (Annex 12).

To make effective and profitable agricultural technologies bring meaningful change on the livelihood of users, popularization and scaling up activities will be performed. Accordingly, 3,522 participants on pulses, 2,936 participants on cereals, 1,220 participants on oil crops, 791 participants on vegetables, 1,589 participants on roots and tubers, 757 participants on fruits, 1,831 participants on herb species and medicinal plants, 2,060 participants on dairy cattle and animal feeds, 85 participants on poultry, 1,463 participants on soil and water (especially soil-based fertilizer usage and management of acidic soil) 95 participants on fish farming technologies will be performed. Similarly, 1,822 participants on pulses, 4,965 participants on cereals, 492 participants on oil crops, and 304 participants on forestry technology packages will be popularized and scaled up in arid and semi-arid areas. Moreover, technology scaling up activities on animal health technologies will be undertaken for 300 residents of Addis Ababa and its environs (Annex 13)



**Table 8: Target for Agricultural extension activities**

No	Activities	2005/06	2006/07	2007/08	2008/09	2009/010	Total
1	Modular training	-	335,580	582,420	954,540	1,080,000	2,952,540
2	Agricultural extension package training						
	-Minimum	1,043,670	1,062,670	1,844,330	3,022,710	3,420,000	10,393,380
	-HH package	137,325	328,560	786,106	1,808,818	1,522,516	4,500,000
3	FTC construction	2100*	2114	6202	2091	-	12507
4	Cumulative number of completed FTCs	5,493	5,593	9,707	15,909	18,000	18,000

\* From the 2100 FTCs to be constructed in year 2005/06 only 100 FTCs will be completed and ready for the year 2006/07

**Table 9: ATVET training Plan 2005/2006-2009/2010**

Department	Number of students graduated			Remaining Balance	2005/2006									
	2003/2004	2004/2005	Total		1 st Yr	2 nd Yr	App	Total						
<b>Plant Science</b>														
	3390	4153	7543	10457	2178	4331	3229	35281	1 st Year	2178	2895	N.P	N.P	N.P
									2 nd Year	4331	1851	2461	N.P	N.P
									App	3229	3898	1666	2215	N.P
<b>Animal Science</b>									Graduates	3068	3703	1583	2104	
	3222	4020	7242	10758	2087	4762	3507	35598	1 st Year	2087	2529	N.P	N.P	N.P
									2 nd Year	4762	1774	2150	N.P	N.P
									App	3507	4286	1597	1935	N.P
<b>Natural Resources</b>									Graduates	3332	4072	1517	1838	
	2257	4701	6958	11042	1798	4733	3463	34952	1 st Year	1798	3301	N.P	N.P	N.P
									2 nd Year	4733	1528	2806	N.P	N.P
									App	3463	4260	1375	2525	N.P
									Graduates	3290	4047	1307	2399	
<b>Animal Health</b>	363	667	1030	4970	1552	1764	361	10707	1 st Year	1552	2740	N.P	N.P	N.P
									2 nd Year	1764	1319	2329	N.P	N.P
									App	361	1588	1187	2096	N.P
									Graduates	343	1508	1128	1991	
<b>Cooperatives</b>	219	386	605	5395	2333	430	277	9645	1 st Year	2333	2752	1471	N.P	N.P
									2 nd Year	430	1983	2339	1250	N.P
									App	277	387	1785	2105	1125
									Graduates	263	368	1696	2000	1069
<b>Total</b>	9451	13927	23378	42622					Total Enrollment	36805	37091	21165	12126	1125

**Assumption :-**

- \* There are 18,000 PAs throughout the country
- \* 1 FTC will be established in each PA.
- \* 1 from each department ( Plant Science, Animal Science and Natural Resource) will be assigned in each FTC
- \* 1 Animal Health assistances and 1 Cooperative graduate to 3 PAs.
- \* 15% for 1 st Year, 10 % for 2 nd Year and 5 % for 3 rd Year attrition rate is used to calculate the projection

**Table 10: Graduates of 2003/04 and 2004/05 and trainers of 2005/06 by Region & Profession**

<b>Region</b>	<b>Year</b>		<b>Animal Science</b>	<b>Plant Science</b>	<b>Natural Science</b>	<b>Animal Health</b>	<b>Cooperate Development</b>	<b>Total</b>
<b>Oromia</b>	<b>2003/04</b>		1033	1309	683	120	47	<b>3192</b>
	<b>2004/05</b>		1715	1741	1908	240	153	<b>5757</b>
		1 <sup>st</sup> Year	575	620	449	667	896	<b>3207</b>
	<b>2005/06</b>	2 <sup>nd</sup> Year	1870	1631	2047	715	163	<b>6426</b>
		3 <sup>rd</sup> Year	1118	1086	1227	167	163	<b>3761</b>
<b>Amhara</b>	<b>2003/04</b>		43	53	9	8	2	<b>115</b>
	<b>2004/05</b>		946	997	1253	201	98	<b>3495</b>
		1 <sup>st</sup> Year	219	222	111	284	634	<b>1470</b>
	<b>2005/06</b>	2 <sup>nd</sup> Year	1319	1154	1263	471	103	<b>4310</b>
		3 <sup>rd</sup> Year	796	701	809	89	98	<b>2493</b>
<b>SNNP</b>	<b>2003/04</b>		695	701	679	95	70	<b>2240</b>
	<b>2004/05</b>		711	1235	475	140	120	<b>2681</b>
		1 <sup>st</sup> Year	849	927	907	378	496	<b>3557</b>
	<b>2005/06</b>	2 <sup>nd</sup> Year	999	1023	848	358	96	<b>3324</b>
		3 <sup>rd</sup> Year	649	659	692	74	43	<b>2117</b>
<b>Somali</b>	<b>2003/04</b>		133	77	47	13	4	<b>274</b>
	<b>2004/05</b>		34	181	101	20	12	<b>348</b>
		1 <sup>st</sup> Year	94	91	64	81	95	<b>425</b>
	<b>2005/06</b>	2 <sup>nd</sup> Year	132	111	102	39	19	<b>403</b>
		3 <sup>rd</sup> Year	68	93	61	6	6	<b>234</b>
<b>Tigray</b>	<b>2003/04</b>		270	262	92	7	0	<b>631</b>
	<b>2004/05</b>		228	269	398	36	18	<b>949</b>
		1 <sup>st</sup> Year	110	107	88	30	145	<b>480</b>
	<b>2005/06</b>	2 <sup>nd</sup> Year	299	261	303	111	32	<b>1006</b>
		3 <sup>rd</sup> Year	699	650	687	12	10	<b>2058</b>
<b>Benshangul</b>	<b>2003/04</b>		31	34	31	0	0	<b>96</b>
	<b>2004/05</b>		40	43	50	8	1	<b>142</b>
		1 <sup>st</sup> Year	48	39	75	27	28	<b>217</b>
	<b>2005/06</b>	2 <sup>nd</sup> Year	44	39	32	17	3	<b>135</b>
		3 <sup>rd</sup> Year	40	25	39	2	3	<b>109</b>
<b>Afar</b>	<b>2003/04</b>		789	1013	675	106	80	<b>2663</b>
	<b>2004/05</b>		68	60	73	10	5	<b>216</b>
		1 <sup>st</sup> Year	81	72	62	24	24	<b>263</b>
	<b>2005/06</b>	2 <sup>nd</sup> Year	56	65	67	20	10	<b>218</b>
		3 <sup>rd</sup> Year	63	36	44	6	4	<b>153</b>
<b>Gambella</b>	<b>2003/04</b>		17	16	27	0	0	<b>60</b>
	<b>2004/05</b>		8	2	4	0	0	<b>14</b>
		1 <sup>st</sup> Year	99	88	67	8	9	<b>271</b>
	<b>2005/06</b>	2 <sup>nd</sup> Year	25	19	18	4	1	<b>67</b>
		3 <sup>rd</sup> Year	10	8	11	0	0	<b>29</b>
<b>Hareri</b>	<b>2003/04</b>		9	8	4	0	0	<b>21</b>
	<b>2004/05</b>		41	39	45	6	3	<b>134</b>
		1 <sup>st</sup> Year	1	2	0	4	7	<b>14</b>
	<b>2005/06</b>	2 <sup>nd</sup> Year	16	6	15	4	2	<b>43</b>
		3 <sup>rd</sup> Year	6	6	13	1	2	<b>28</b>

Region	Year		Animal Science	Plant Science	Natural Science	Animal Health	Cooperate Development	Total
Addis Ababa	2003/04		27	27	4	5	5	<b>68</b>
	2004/05		57	55				<b>112</b>
		1 <sup>st</sup> Year	0	0	0	39	0	<b>39</b>
	2005/06	2 <sup>nd</sup> Year	0	1	0	16	0	<b>17</b>
		3 <sup>rd</sup> Year	12	7	1	4	0	<b>24</b>
Dire Dawa	2003/04		24	23	24	2	1	<b>74</b>
	2004/05		19	18	33	6	1	<b>77</b>
		1 <sup>st</sup> Year	0	0	2	3	0	<b>5</b>
	2005/06	2 <sup>nd</sup> Year	12	39	18	11	2	<b>82</b>
		3 <sup>rd</sup> Year	15	14	15	0	0	<b>44</b>

Total	2003/04	3071	3523	2275	356	209	<b>9434</b>	
		2004/05	3867	4640	4340	667	411	<b>13925</b>
	2005/06	1 <sup>st</sup> Year	2076	2168	1825	1545	2334	<b>9948</b>
		2 <sup>nd</sup> Year	4772	4349	4713	1766	431	<b>16031</b>
		3 <sup>rd</sup> Year	3476	3285	3599	361	329	<b>11050</b>

## 2.8 The Food Security Program

The Food Security Program is a special arrangement, which focuses on addressing vulnerability, which exists in different parts of the country. Records show that in a worst year up to fifteen million people in the drought prone areas of the country could face food shortages, which are either chronic or transitory in nature. The cause for the former is structural, while the later is usually triggered by short-term emergency situations.

Cognizant of the level of vulnerability in the country, the Government, in close collaboration with its development partners, has developed the Program within the framework of the wider PASDEP. The core objectives of the Program are two. One is to enable the 8.29 million chronically food insecure attain food security within a five year period, and the other to improve significantly the food security situation of the remaining 6.71 million facing transitory problems within the same period.

At the design stage of the Program, five million people were considered as chronically food insecure, while the remaining ten million were considered as vulnerable to transitory problems. The estimate of the chronic caseload then was a simple average of the previous ten years relief beneficiaries. In the last one year, however, a proper estimate of the chronic caseload has been undertaken, and recent estimates have put this number at 8.29 million with the balance of 6.71 now considered as facing transitory problems. Chronic food insecurity reflects loss of capacity to produce or buy enough to meet annual food needs even under normal weather and market conditions. Transitory food insecurity, on the other hand, reflects a weak resilience to withstand shocks in times of severe droughts.

There are two underlying principles which guide the Program implementation: reliance to the extent possible on helping farmers use their own resources to overcome food insecurity, and a shift away from reliance on food aid. Since 2003, the Program has been under implementation in most of the chronically food-insecure woredas. Lots of progress has been made during this period in addressing the root causes of the problem, but much more remains to be done. The latter has required a revision of the implementation period, which is now set at five years starting from 2005/06 and ending in 2009/10.

### **2.8.1 Key Intervention: -**

The key interventions designed to attain household food security over the five-year period are four. These are:

- Building household assets through on-farm activities.
- Undertaking a resettlement program.
- A Safety Net Program, which helps bridge food gaps while building community assets.
- Introducing non-farm activities.

**The details of these interventions are as follows: -**

#### **a) Household Asset Building: -**

The major cause of food insecurity in the country is the depletion of household assets. Multiple causes can be cited in this regard. Drought has been a major factor causing loss of crops and livestock. Repeated food shortages have also forced many to sell their assets to address immediate needs. The land has for various reasons also lost its productivity, depriving much the ability to produce enough with existing resources and technologies.

Building sustainable household assets is therefore the major solution to the problem of food insecurity for which appropriate technologies have to be identified and needed resources availed. There have been focuses in this direction over the last two years during which technologies, which helped improve production and productivity, have been introduced depending on the socio-economic conditions of the chronically food-insecure households. Different menus of technological packages have been prepared and disseminated to these households through the extension services. The packages include provision of improved inputs to increase livestock and crop production and productivity, moisture conservation and utilization, natural resource development, trainings, support for additional income-generating activities, and provision of market information. This effort

will over the coming years be expanded and refined supported by a credit facility to the targeted households.

Needless to say, the technology introduced has to help address the moisture problem. Water is one of the most critical resources for crop production in moisture-deficit areas, and the focus in this regard will be on the productive use of rainwater and surface runoff/ run on systems, such as pond construction, roof water harvesting, simple diversion schemes, and construction of hand-dug wells combined with catchments treatment. Small-scale irrigation is also very important to improve cropping intensity and thereby reduce the effect of erratic rainfall. The irrigation technologies will include construction of earth dams, river diversions, treadle pumps, and hand pumps that are managed by individual or group of farmers.

On the livestock side, the technology focus will be on introducing improved animal breeds and availability of improved animal feed, water, and health. To this effect, due attention will be given to the establishment of water points, production of forage and fodder crops at household level, and improvement of community grazing.

#### **b) Voluntary Resettlement Program:-**

Over the last many years, a large portion of the country's population has lost the capacity to be productive mainly due to land degradation and high population pressure, while the country has a considerable amount of land currently under- utilized but still suitable for farm activities. To rationalize the resource use, and thereby help the food insecure households, the government has embarked on resettlement as part of its food security program. Accordingly, it has targeted to help resettle 440,000 households or 2.2 million people.

Resettlement is purely on voluntary basis, and each settler household is guaranteed assistance of packages that include provision of up to 2 hectares of fertile land, seed, oxen, hand tools, utensils, and food ration for the first eight months. The settlers are also provided access to essential social infrastructures (clean water, health post, feeder road), and logistics support. To ensure the efficient and effective

implementation of the program, an implementation manual has been prepared, and extensive training and awareness creation works have been carried out at federal, regional, woreda and kebele levels.

To date, over 149,000 households have been resettled. Despite some problems encountered in early implementation, especially during the first year, the resettlement program has proved itself as a crucial and reliable alternative to ensure food security in a very short period of time. Recent assessments have showed that the majority of the settlers have attained self-sufficiency in food and their livelihood has improved considerably. This program will therefore be expanded to accommodate as many settlers as possible.

### **c) The Productive Safety Net Program**

The Safety Net Program is intended to serve a dual purpose of helping bridge the income gap of the chronically food insecure households, and engaging such households in community asset-building efforts to earn their income.

The program is designed to address the income gap faced by the 8.29 million chronically food insecure people in 287 woredas. It has two components - labor-intensive public works and direct support for labor-poor household. The able bodied will be engaged in public works for which they are paid a minimum amount, while the labor poor are paid the same amount free. A program implementation manual has been prepared, and training and awareness creation activities have been undertaken at different levels. The communities supported have identified target groups for public works and direct support, and capacity-building measures have been taken. The training and capacity building effects will continue where required.

The Government and donors have shown strong commitment to the success of the program, which started in February 2005. It has now completed its first year and the second year's activity has started in January 2006. Implementation of this program will continue.

A key feature of the Safety Net Program is its household focus. It is linked to the household asset building effort of the Food Security Program in that the priority of the household asset building effort will



be on those covered by the Safety Net Program as they are the chronically food insecure. The Safety Net Program through its predictable resources will help prevent asset depletion, which is an important factor for the attainment of food security. This is in addition to the community assets it helps build.

**d) Non Agricultural Income: -**

As the food insecure households are resource poor, living in drought - prone and degraded areas, focusing on crop and livestock production alone may not entirely solve the problem of food insecurity in some areas. For such areas, income diversification through non-agricultural activities is important. To this effect, the Food Security Program considers alternative or supplementary income sources in non-farm activities. This intervention requires market effectiveness, credit services through micro-finance institutions, establishment of marketing cooperatives, and provision of training, all of which are important for both agricultural and non-agricultural activities.

**e) Other Interventions: -**

In addition to the key interventions discussed above, due attention will also be given to nutritional issues, and the maintenance of emergency capabilities.

Nutritional issues encompass three components - food, health, and caring practices. The Ministry's responsibility in this regard is on food production and distribution, which will be addressed through the aforementioned interventions. The production of adequate food both in quantity and quality will be given due attention. The rest of the nutritional interventions will be by the Ministry of Health and other pertinent bodies.

In light of the presence of transitory food insecurity in the country, maintaining emergency capabilities will be important. In this regard, the functions of the Food Security Co-ordination Bureau and the Disaster Prevention and Preparedness' Agency will be merged to ensure effective

and unified response to both chronic and transitory food problems. With the improvements in food security, the threats of emergencies are expected to diminish.

**Table 11: Five Years Target of the Food Security Program**

No.	Region/Activities	Unit	Targets					Total
			2005/06	2006/07	2007/08	2008/09	2009/10	
<b>1</b>	<b>Amphora Region</b>							
1.1	Resettlement	Household Number	10,000	15,000	15,000		-	40,000
1.2	HH graduates	»	100,000	104,875	110,578	76,696	57,273	449,422
<b>2</b>	<b>SNNP Region</b>							
2.1	Resettlement	»	17,600	7,600	20,000	20,000	52,400	117,600
2.2	HH graduates	»	10,000	36,000	70,000	140,000	-	256,000
<b>3</b>	<b>Tigris Region</b>							
3.1	Resettlement							
3.2	HH graduates	Household Number	49,427	127,130	167,751	149,021	149,021	642,350
<b>4</b>	<b>Roomier Region</b>							
4.1	Resettlement	»	3,508	*				3,508
4.2	HH graduates	»	37,838	52,969	26,485	26,485	27,068	170,845
	Total	»	228,373	343,574	409,814	412,202	285,762	1,679,725
	Resettlement	»	31,108	22,600	35,000	20,000	52,400	161,108
	HH graduates	»	197,265	320,974	374,814	392,202	233,362	1,518,617

\* Starting 2006/07 the number of settlers will be determined based on the study that will be conducted at the end of 2005/06 fiscal year.

## **.9 Agricultural Marketing and Institutional processes**

Market Strengthening relates to improving both the functioning of local markets to farmers capture greater benefits; and improving integration with regional and global markets for Commercial Agriculture.

It is expected that the small farmers will take the lead, but the government will take the steps to link with large farmers, co-operatives and private sectors by ensuring the flow of information, establishing level playing field, making available the necessary infrastructure, access to land, providing direct supports for getting access to new technologies.

Particular interventions that have been undertaken include the re-structuring of the MOARD and the creation of marketing sector, developing a new marketing strategy, the creation of co-operative commission, establishing warehouse receipt and inventory credit system, promotion of trade in association with various sub-sectors and stake-holders, dialogue between private and public sectors. In the market shall play pivotal role in building efficient agricultural marketing.

Regarding market institutions, due importance is given to develop an Ethiopian commodity exchange center, grades, and standards contract enforcement, and regulations, which can mutually reinforce each other. These efforts include the schemes linking producers to processors, the producers to market-oriented co-operatives, exporters.

### **2.9.1 Agricultural Input Marketing**

#### **• Fertilizer Supply**

To build a sustainable and competitive fertilizer marketing system in terms of timeliness, accessibility, availability and affordability a guideline for fertilizer procurement, import and distribution will be issued and implemented during the plan period. The guideline addresses measures to reduce fertilizer-marketing costs, improve credit access for fertilizer supply through merchandize periodic arrangement system, improve timelines of supply and clearly show the roles and responsibilities of each actor in fertilizer marketing.

In order to attain the level of crop production target at the end of the plan period it is estimated that the fertilizer supply will increase from 480,000 tones in 2005 to 820,000 metric tones in 2010.

To ensure quality fertilizers are supplied to the end user quality control activities will be conducted at the main transit warehouses at Federal level. In addition, the respective regions will conduct fertilizer quality control activities until it reaches the end user.

- **Improved Seed Supply**

To ensure a sustainable and reliable improved seed supply, seed multiplication on farmers' field will be taken as a major focus area of intervention during the five years plan period. In line with this the role of the Ethiopian Seed Enterprise will focus on the production of pre-basic and basic seeds in the future.

During the plan period farmers' demand for improved seeds is planned to be met through multiplying seeds by ESE on its large farms and on farmers' field; from private seed producers, and seed multiplication on farmers' field by regions. Accordingly, at the end of the plan year the seed supply from the aforementioned sources will reach 1.8 million quintals. Of the stated planned quantity the share of ESE on its large farms and farmer's fields are 144,000 Quintals and 576,000 quintals respectively. Similarly the share of private seed producers and seed multiplication on farmers' fields through regional governments will be 180,000 quintals and 900,000 quintals respectively.

To ensure quality seeds are distributed, seed produced on ESE's and private large farms will be inspected at federal level, while seeds' produced on the respective regions will inspect farmer's fields.

- **Supply of Other Inputs**

At the end of the plan period the supply of different types of others inputs such as farm implements, irrigation equipment and livestock inputs are projected to reach in number 344,000; 206,017 and 1,418,173 respectively. During the plan period a study will be conducted and quality control activities will be initiated for these inputs.

- **Capacity Building and Studies**

For the realization of the above targets capacity building (institutional and human resource) activities and studies will be conducted. To this effect local and foreign trainings will be offered on the areas of agricultural input

marketing and quality control on which 17 federal and 3,143 regional staff will participate. National seed laboratories will also be upgraded.

In addition, studies will be conducted on the sources and channel of input supply and profitability of input use.

Table 12: Five Years Development Plan of Agricultural Input Market Department (2006 -2010)

S.No	Component	Activities	Unit	Status in 2005	Development Plan				
					2006	2007	2008	2009	2010
1.	Fertilizer supply	1.1 Coordinate and facilitate the supply of chemical fertilizer	Tones	480,000	600,000	650,000	700,000	756,000	820,000
		▪ DAP	Tones	320,000	340,000	370,000	400,000	432,000	470,000
		▪ Urea	Tones	160,00	260,000	280,000	300,000	324,000	350,000
		1.2. Supply of organic fertilizer (“Orga”)	Tones	-	10,000	10,300	10,700	11,300	12,000
2.	Improved Seed supply	2.1. Improved seed supply by ESE	Quintal						
		• On its large farms			727,209	488,079	359,933	243,289	144,000
		• On farmers’ field	Quintal		391,575	488,079	539,899	567,675	576,000
		2.2. On farmers’ field by regions			131,622	334,683	494,908	664,990	900,000
		2.3. On private farms			65,810	83,671	104,980	145,974	180,000
	Total	Quintal		1,316,216	1,394,512	1,499,720	1,621,928	1,800,000	

\* Quality Control activities to be carried out at federal and regional level will be calculated based on the above figures.

## 2.9.2 **Improve & Strengthen the Domestic Market**

The government in its endeavor to improve the marketing system has formulated a market development strategy and implementation plan. The emphasize of the strategy is introducing a market oriented approach to smallholder on the one hand and establishment of efficient marketing system on the other. Domestic market chain improvement is a pre-condition to increase export in a competitive way.

Generally the strategy emphasizes on improving the market chain of agricultural produce where by increase farm get price, reduce market related transaction costs, and improve market transparency and increase volume and quality of supply.

To realize these improvements the following activities will be given special attention within 5 years.

### ➤ **Improving Domestic Market Chain**

- Establishing 10 commodity exchange centers (Addis Ababa, Nazareth, Shashmene, Awassa, Dire Dawa Bale, Nekempt, Jimma, Humera and Metema) for six commodities (Teff, Wheat, Maize, Sesame Haricot Bean, Coffee)
- Formulation and implementation of market rules, regulations and guidelines for implementation of the marketing strategy
- Improving the supply chain of agricultural commodities.
- Preparing conference and exhibition
- Joint discussion forum with suppliers and market support services on agricultural challenges and prospects Developing promotional materials

### ➤ **Institutional Development**

- ❖ Promoting and strengthening linkage between producers (out growers), cooperatives, with processors and exporter.
- ❖ Studying and developing contractual marketing modalities.
- ❖ Developing and upgrading of rural infrastructure such as roads transport facilities and rural telephone service to open up and connect remotes to the market,

- ❖ Establishing agriculture products and livestock market center's
- ❖ Introducing, modern auction systems for agricultural produce
- ❖ Establishing of district slaughterhouses.

### **2.9.3 Export Market Development**

#### ➤ Infrastructure and Other Facilities

At the end of the 5<sup>th</sup> year:-

- ❖ 12 additional export abattoirs will be established:
- ❖ 11 fruit and vegetable cold storages and pack house facilities will be established.
- ❖ 7 existing fruit and vegetable storage and pack house facilities will be Upgraded and renovated. And 29 refrigerated trucks for export will be purchased.
- ❖ 49 export standard natural gum stores and refinery houses will be constructed.

#### ➤ Market Research and Promotion

To promote the export of agricultural commodities and penetrate the international markets:-

- ❖ Detailed export market strategy will be developed
- ❖ 11 export trade missions will be organized and coordinated.
- ❖ 11 new export markets will be entered to.
- ❖ The requirements of the new 11 markets in terms of SPS, package, export handling and other requirements will be assessed.
- ❖ 320 thousand promotional brochures will be developed and published.
- ❖ 4 documentary films in Amharic, English, and French & Arabic languages will be developed.
- ❖ 6.04 million Posters will be produced and distributed.
- ❖ 70 private and cooperative exporters profile will be Developed and updated.



➤ Export Targets:

At the end of the 5 years, by exporting a total of 973 thousand live animals and 5.0 million metric tons of agricultural and livestock products, the country will earn a sum of 5.7 billion USD.

**Table 13: Agricultural Products Export Plan by Volume and Value**

No.	Product type	Unit	Total Volume	Total Value(m/us
1	Live Animal Export	‘000Head	973	153
2	Meat Export	‘000Tons	224	493
3	Egg Export	" "	0.5	1.30
4	Honey Export	" "	0.5	2.17
5	Wax Export	" "	2	7.9
6	Civet Export	" "	3.3	1
7	Cereals	" "	223	65
8	Pulses	" "	1056	296
9	Oilseeds	" "	1168	1054
10	Natural gums	" "	24	34
11	Coffee	" "	1790	2950
12	Tea	" "	23	38
13	Spices	" "	92	60
14	Cotton	" "	38	489
15	Fruits and vegetables	Tons	358	249
	Total			5740.4

#### 2.9.4 Grades and Standards

Standards and grades have come to be crucial elements facilitating transactions and trade both with and between countries. Standards and technical regulations stipulate what can or cannot be exchanged and define the procedures that must be followed for exchange to take place. Thus, the ability to comply with standards in overseas markets is a major factor determining access to those markets and more broadly the capacity to export.

The following are possible areas of intervention

- Development and introduction of grades and standards on major agricultural products.
- Awareness creation about quality and standards among consumers, producers, traders and others.

- Develop systems, regulation and capacities for quality inspection and certification.
- Develop, publicized, improve the existing national system for classifying mainstream coffee grades and standards
- Establishment of liquoring and auction centers in major coffee growing selected woredas.

### **2.9.5 Warehouse Receipts & Inventory Credit System Implementation**

- ❖ The implementation of warehouse receipt system will be expanded to a storage capacity of 1,700,000 quintals of grain and to accommodate seven different crops through the licensing and certification of 25 additional warehouses, setting standard for five more crops and training of 1600 stakeholders of the system. Moreover, warehouse receipt system regulation will be developed and a grain quality-testing laboratory will be established.

### **2.9.6 Agricultural marketing information system**

At the moment, for some of agricultural products market information are collected, analyzed and disseminated to the public in an organized manner.

To systematize and scale-up the information coverage, government is undertaking several efforts, one of these efforts, which enable us to cover all agricultural products all over the country, is a woreda net. Developing content and application is the major duty.

To establish agricultural marketing information system the following Major activities will be undertaken

- Develop content and application for woreda net;
- Develop and disseminate agricultural marketing information manual;
- produce and disseminate annually agricultural marketing statistical bulletin;
- Strengthening the existing coffee and livestock market information endeavors;
- Select sample woredas and establish grain, fruits, horticulture, and forest products and by products price market information system;

- Undertake studies which enable market information system to be efficient and effective;
- Regularly collect, analyze and disseminate local and international agricultural marketing information which will support the agricultural marketing endeavors;

### **2.9.7 Capacity building**

To build the Capacity on agricultural marketing the following Major activities will be undertaken:-

- Render short term training for 1000 private sectors, regional and federal staff in different agricultural marketing concepts;
- Formulation and implementation of market rules, regulations and guidelines;
- Organize and arrange 5 marketing study tours for private sectors and government-marketing professionals;
- Organize and give 10 long-term training in the area agricultural Marketing;
- Organize 10 seminars and 10 workshops on grain marketing challenges & prospects; and
- Train the farmers through the extension system about marketing of agricultural products;

## 2.9.8 Export Targets

The summaries of agricultural product exports are shown below on commodity bases.

**Table 15: Summary of base year (2004/05) performance against achievable target at the end of the 5<sup>th</sup> year (2009/10)**

**Volume:** Live animals in 000heads; others in '000 Tones  
**value:** in Million USD

No.	Product type	Volume		Value	
		Base year (2004/05)	Target year (2009/10)	Base year (2004/05)	Target year (2009/10)
1	Live Animal Export	102	213	12.4	33.6
2	Meat Export	8	62	15.6	136.4
3	Egg Export	0.1	0.2	0.22	0.3
4	Honey Export	0.02	0.1	0.35	0.48
5	Wax Export	0.4	0.5	1.18	1.73
6	Civet Export	0.06	0.71	0.23	0.28
7	Cereals	18	62.21	8.76	18.23
8	Pulses	119.5	294.5	35.29	82.4
9	Oilseeds	141.2	325.6	101.96	293.03
10	Natural gums	3.4	6.6	4.95	9.30
11	Coffee	159.6	323	334.5	786.67
12	Tea	1.5	5.6	2.6	9.22
13	Spices	11.3	20.3	7.51	14.01
14	Cotton	1.6	8.4	1.39	9.28
15	Fruits and vegetables	39.5	135.9	19.22	120.03
	<b>Total</b>			<b>946.96</b>	<b>1344.66</b>

Table 16. Agricultural Products Export Plan by Volume

No.	Product type	Unit	2004/2005 achievements	Total	05/06	06/07	07/08	08/09	09/10
1	Live Animal Export	Head	10,2000	973,000	180,000	185,000	193,000	202,000	213,000
2	Meat Export	Tons	8,000	224,000	30,000	36,000	45,000	52,000	62,000
3	Egg Export	" "	100	1,011	187	193	200	210	221
4	Honey Export	" "	1.8	481	89	92	95	100	105
5	Wax Export	" "	400	2,412	446	459	478	502	527
6	Civet Export	" "	0.61	3.29	0.63	0.63	0.65	0.67	0.71
7	Cereals	" "	18,000	223,250	30,000	36,000	43,200	51,840	62,210
8	Pulses	" "	119,450	1,056,710	142,000	170,400	204,480	245,380	294,450
9	Oilseeds	" "	141,230	1,168,340	157,000	188,400	226,080	271,300	325,560
10	Natural gums	" "	3,385	24,445	3,587	4,051	4,667	5,499	6,641
11	Coffee		159,630	1.226mil	178,000	207,000	240,000	278,000	323,000
12	Tea		1,540	23,360	3,000	4,576	4,904	5,254	5,626
13	Spices		11,250	92,278	16,700	17,535	18,412	19,332	20,299
14	Cotton		1,580	38,353	6,950	7,298	7,662	8,045	8,448
15	Fruits and vegetables	Tones	39,483	357,770	45,000	49,590	55,013	72,286	135,881

**Table 17. Agricultural Products Export Plan by Value**

No.	Activity	Unit	2004/2005 achievements	Total	05/06	06/07	07/08	08/09	09/10
1	Live Animal Export	Mill. USD	12.4	153.3	28.4	29.4	30.4	31.5	33.6
2	Meat Export	" "	15.6	492.8	66	77	99	114.4	136.4
3	Egg Export	" "	0.22	1.30	0.24	0.25	0.26	0.27	0.28
4	Honey Export	" "	0.35	2.17	0.40	0.41	0.43	0.45	0.48
5	Bee-Wax Export	" "	1.18	7.9	1.46	1.50	1.57	1.64	1.73
6	Civet Export	" "	0.23	1.31	0.25	0.25	0.26	0.27	0.28
7	Cereals	" "	8.76	65.39	8.8	10.55	12.62	15.19	18.23
8	Pulses	" "	35.29	295.76	39.76	47.60	57.23	68.73	82.44
9	Oilseeds	" "	101.96	1,054.05	143.82	169.56	203.47	244.17	293.03
10	Natural gums	" "	4.95	34.22	5.02	5.67	6.53	7.70	9.30
11	Coffee	" "	334.5	2,945.56	393.3	504.44	584.44	676.67	786.67
12	Tea	" "	2.6	37.98	4.6	7.5	8.04	8.61	9.22
13	Spices	" "	7.51	61.56	9.4	12.1	12.7	13.34	14.01
14	Cotton	" "	1.39	44.3	7.4	8.03	8.43	8.84	9.28
15	Fruits and vegetables	" "	19.22	249.25	24.47	25.73	30.4	48.62	120.03
<b>Total</b>			<b>546.16</b>	<b>5446.85</b>	<b>733.32</b>	<b>899.99</b>	<b>1055.78</b>	<b>1240.40</b>	<b>1514.98</b>

## 2.9.9 Cooperative Development

### The Major Targets are: -

- Deliver the services of cooperatives to 70% of the population.
- Increase the share of the cooperatives in input and output marketing from 70% to 90%.
- Increase the number of primary marketing cooperatives from 14,423 to 24,677.
- Increase the number of rural cooperative unions from 105 up to 646.
- Establish 4 cooperative federations (grain, coffee, fruits & vegetable and dairy) at federal level.
- Increase Co-operative sector saving from 630 Million to 1.2 Billion Birr by increasing rural from 520 to 3611 primary and from 8 to 98 secondary level saving and increase, 2200 urban saving societies up to 4100 primary saving and credit societies.
- Provide rural household with electric service by organizing 420 rural electrification service cooperatives.
- Increase the production and productivity and promote investment and agro processing through facilitating the provision of 13 billion credits to cooperatives.
- Build the capacity of cooperative movement by providing short-term training for 202792 board members; 50,508 cooperative employees; 3,767 government employees (cooperative experts) and long term training will be given for 7,763; 4,000 & 120 cooperative experts at diploma, first degree and second degree level respectively. There by increase their capacity in caring out the tasks of the cooperatives.
- Undertake workshops with the regional cooperative offices twice a year and share experience.
- Undertake awareness creation programs thorough radio and different Medias.





**Table 18: Cooperative Development**

<b>No</b>	<b>Major Tasks</b>	<b>Unit</b>	<b>5 year targets</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
<b>1</b>	<b>Capacity building</b>	Number						
	<b>1.1. Cooperative Societies</b>	-						
	1.1.1 Primary cooperatives board members	-	178,152	71,528	37,040	22,920	19,848	19,816
	1.1.2 Primary cooperatives employees	-	50,186	8,798	15,783	12,501	9,461	3,643
	1.1.3 Cooperative union board members	-	4,522	1,400	1,400	763	588	371
	1.1.4 Cooperative union employees	-	1,938	600	600	327	252	159
	1.1.5 Cooperative federations board numbers	-	21	-	14	7	-	-
	1.1.6 Cooperative federations employees	-	9	-	-	6	-	3
	1.1.7 Cooperative league board members	-	15	-	-	-	-	15
	<b>1.2 Government employee</b>	-						
	1.2.1 On job training	-	3,767	2,295	820	652	-	-
	1.2.2 Diploma	-	7,763	211	443	234	398	6,477
	1.2.3 first Degree	-	1,103	-	-	570	533	-
	1.2.4 Second Degree	-	120	19	22	26	26	27

<b>No</b>	<b>Major Tasks</b>	<b>Unit</b>	<b>5 year targets</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
<b>2</b>	<b>Organize rural &amp; urban society under different types of cooperative.</b>	%	70	35	5	10	10	10
<b>3</b>	<b>Organza different types of cooperative societies</b>							
	3.1 Give technical support to regional cooperative offices to increase the No of primary cooperatives	Number	22,269	8,941	4,630	3,740	2,481	2,477
	3.2 Give technical support to regional cooperative offices to organize primary and secondary saving & credit cooperatives. <ul style="list-style-type: none"> <li>▪ Urban Primary</li> <li>▪ Rural Primary</li> <li>▪ Secondary /Unions</li> </ul>	Number . .	2,100 3,611 98	420 679 11	420 690 16	420 706 18	420 760 26	420 776 27
	3.3 Establish housing cooperative unions in urban areas.	.	6	-	1	1	2	2
	3.4 Establish handcraft cooperative unions in urban areas.	.	10	-	2	2	3	3
	3.5 Establish consumer's cooperative in urban	.	200	-	50	50	50	50

No	Major Tasks	Unit	5 year targets	1998	1999	2000	2001	2002
	areas.							
	3.6 Give technical support to regional cooperative offices to increase the number of cooperative unions	.	646	200	200	109	84	53
	3.7 Organize cooperative league	.	1	-	-	-	-	1
	3.8 Organize cooperative federations	.	3	1	1	-	-	1
	3.9 Organize Rural Cooperative Banks	.	3	-	1	1	1	-
	3.10 Give technical support to regional cooperative offices to organize rural electrification cooperatives	.	420	120	100	100	100	-
	3.11 Give technical support to regional cooperative offices to organize rural telecommunication cooperatives	.	20	4	4	4	4	4
<b>4</b>	<b>Improve the role of cooperative in input &amp; put marketing</b>							
	▪ Input marketing	%	90	70	80	90	90	90
	▪ Grain marketing	%	80	20	40	60	70	80
<b>5</b>	<b>Facilitate the provision of credit to cooperatives for input &amp; out put marketing &amp; Agro processing services</b>	.						
	▪ From RUFIP	Birr (in Million)	56	8	12	12	12	12
	▪ From Other Sources							
	● For grain & input marketing	Birr	9.673	1.300	1.560	1.872	2.246	2.695

	• For Agro processing	(in Million)	3.000	0.415	0.434	1.605	0.198	0.348
<b>No</b>	<b>Major Tasks</b>	<b>Unit</b>	<b>5 year targets</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
<b>6</b>	<b>Undertake workshops with regional cooperative offices &amp; share experience</b>	Number	10	2	2	2	2	2
<b>7</b>	<b>Undertake awareness creation programs through radio and other Medias</b>	Minutes	3600	720	720	720	720	720

## Annex I

**Table 1.1 Projected area and production estimate for all seasons under different management practices (2005- 2010)**

(Area in 000' ha, Production in million ton)

Production Year	Improved seeds + Fertilizer		Local seeds + Fertilizer		Traditional practices		Total	
	Area	Production	Area	Production	Area	Production	Area	Production
2004/2005	2057	5.11	6433	8.75	3791	2.82	12281	16.66
2005/2006	2194	7.71	5346	11.02	4864	4.75	12404	23.48
2006/2007	2324	9.04	5281	12.58	4860	4.64	12465	26.26
2007/2008	2500	12.00	5174	13.52	4853	5.00	12527	30.51
2008/2009	2703	13.75	5055	15.20	4830	5.58	12588	34.53
2009/2010	3368	18.26	4899	14.73	4382	5.22	12649	38.21

## Annex I

**Table 1.2 Projected area and production estimate for Meher seasons under different management practices (2005- 2010)**

(Area in 000' ha, Production in million ton)

Production Season	Improved seeds + Fertilizer		Local seeds + Fertilizer		Traditional practices		Total	
	Area	Production	Area	Production	Area	Production	Area	Production
2004/2005	1977	4.68	5890	7.72	3126	2.23	10993	14.62
2005/2006	2108	7.16	4882	9.98	4079	3.85	11069	20.99
2006/2007	2210	8.31	4800	11.30	4052	3.91	11062	23.52
2007/2008	2358	11.08	4680	12.00	4024	3.95	11062	27.03
2008/2009	2533	12.52	4551	13.48	3982	4.33	11066	30.33
2009/2010	3162	16.74	4394	13.07	3519	3.96	11075	33.77

## Annex I

**Table 1.3 Projected area and production estimate Belg season under different management practices (2005- 2010)**  
(Area in 000' ha, Production in million ton)

Production Season	Improved seeds + Fertilizer		Local seeds + Fertilizer		Traditional practices		Total	
	Area	Production	Area	Production	Area	Production	Area	Production
2004/2005	0	0	436	0.60	605	0.44	1041	1.04
2005/2006	0	0	375	0.57	677	0.61	1052	1.18
2006/2007	0	0	371	0.65	715	0.58	1086	1.23
2007/2008	0	0	365	0.76	721	0.64	1086	1.40
2008/2009	0	0	358	0.83	728	0.72	1086	1.55
2009/2010	0	0	350	0.74	737	0.80	1087	1.54

## Annex I

**Table 1.4 Projected area and production estimate for irrigation season under different management practices (2005- 2010)**  
(Area in 000' ha, Production in million ton)

Production Season	Improved seeds + Fertilizer		Local seeds + Fertilizer		Traditional practices		Total	
	Area	Production	Area	Production	Area	Production	Area	Production
2004/2005	80	0.43	107	0.43	60	0.15	247	1.00
2005/2006	86	0.55	89	0.47	108	0.29	283	1.31
2006/2007	114	0.73	110	0.63	93	0.15	317	1.51
2007/2008	142	0.92	129	0.75	108	0.41	379	2.08
2008/2009	170	1.23	146	0.89	120	0.53	436	2.65
2009/2010	206	1.52	155	0.92	126	0.46	487	2.90

**Annex I**

**Table 1.5 Projected area, yield and production estimate of major crops for Meher season (2005- 2010)**

**(Area in 000' ha, Yield in quintal /ha and Production in million ton)**

Production Season	Cereals			Pulses			Oil crops			Horticultural			Fiber crops		
	Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production
2004/2005	8318	14.57	12.12	1294	10.51	1.36	1223	4.17	0.51	158	39.87	0.63	0	0.00	0
2005/2006	8264	20.72	17.12	1391	10.19	1.42	1272	6.68	0.85	142	112.68	1.60	0	0.00	0
2006/2007	8259	23.80	19.66	1390	10.36	1.44	1271	6.61	0.84	142	111.27	1.58	0	0.00	0
2007/2008	8260	27.74	22.91	1391	11.43	1.59	1270	7.56	0.96	141	111.35	1.57	0	0.00	0
2008/2009	8404	32.84	27.60	1388	12.44	1.73	1274	7.88	1.00	0	0.00	0.00	0	0.00	0
2009/2010	8472	36.60	31.01	1359	13.02	1.77	1244	7.91	0.98	0	0.00	0.00	0	0.00	0

Production Season	Total		
	Area	Productivity	Production
2004/2005	10993	13.30	14.62
2005/2006	11069	18.96	20.99
2006/2007	11062	21.26	23.52
2007/2008	11062	24.44	27.03
2008/2009	11066	27.41	30.33
2009/2010	11075	30.49	33.76

## Annex I

**Table 1.6 Projected area, yield and production estimate of major crops for Belg season (2005- 2010)**

**(Area in 000' ha, Yield in quintal /ha and Production in million ton)**

Production Season	Cereals			Pulses			Oil crops			Horticultural /Irrigated crops			Fiber crops		
	Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production
2004/2005	729	11.68	0.85	312	6.12	0.19	0	0	0	0	0	0	0	0	0
2005/2006	752	12.23	0.92	300	8.50	0.26	0	0	0	0	0	0	0	0	0
2006/2007	769	13.09	1.01	317	6.94	0.22	0	0	0	0	0	0	0	0	0
2007/2008	769	10.17	0.78	317	19.56	0.62	0	0	0	0	0	0	0	0	0
2008/2009	739	17.11	1.26	347	8.36	0.29	0	0	0	0	0	0	0	0	0
2009/2010	773	15.52	1.20	314	10.83	0.34	0	0	0	0	0	0	0	0	0

Production Season	Total		
	Area	Productivity	Production
2004/2005	1041	10.02	1.04
2005/2006	1052	11.22	1.18
2006/2007	1086	11.29	1.23
2007/2008	1086	12.91	1.40
2008/2009	1086	14.32	1.55
2009/2010	1087	14.17	1.54



**Ethiopian Institute of Agricultural Research (EIAR)**  
**Research Goals (2006-2010)**

Annex 2: Crops Research sector Goals

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
High rainfall areas	Cereal crops variety	No.		√	1	1	-	-	-	-
High rainfall areas	Pulses variety	No.		√	7	2	1	2	1	1
High rainfall areas	Oil crops variety	No.		√	3	-	-	1	1	1
High rainfall areas	Fiber crops	No.		√	2		1		1	
High rainfall areas	Vegetables and flowers variety	No.		√	2	1	-	-	1	-
High rainfall areas	Spice crops variety	No.		√	4		1	1	1	1
High rainfall areas	Root crops variety	No.		√	4		1	1	1	1
High rainfall areas	Tea variety	No.		√	2				1	1
Low rainfall areas	Cereal crops variety	No.		√	3	3	-	-	-	-
Low rainfall areas	Pulses variety	No.		√	3	1	-	1	-	1
Low rainfall areas	Oil crops variety	No.		√	3	-	-	2	1	-
Low rainfall areas	Fiber crops variety	No.		√	2				1	1
Low rainfall areas	Fruits variety	No.		√	2				1	1
Low rainfall areas	Root crops variety	No.		√	4		1	1	1	1
Irrigated	Oil crops variety	No.		√	2				1	1
Irrigated	Fiber crops variety	No.		√	3		1	1	1	
Irrigated	Vegetables and flowers variety	No.		√	1	-	1	-	-	-
Irrigated	Fruits variety	No.		√	7		1	2	2	2
Irrigated	Cereal crops variety	No.	√		2	-	1	-	1	-
Irrigated	Oil crops variety	No.	√		2				1	1
Irrigated	Fiber crops variety	No.	√		2				1	1
Irrigated	Vegetables and flowers variety	No.	√		2	1	-	-	1	-
Irrigated	Fruits variety	No.	√		8	1	1	2	2	2
High rainfall areas	Cereal crops variety	No.	√		27	6	6	6	5	4
High rainfall areas	Pulses variety	No.	√		8	2	1	2	1	2
High rainfall areas	Oil crops variety	No.	√		5	1	1	1	1	1
High rainfall areas	Fiber crops variety	No.	√		2				1	1
High rainfall areas	Vegetables variety	No.	√		4	2	-	1	-	1

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
High rainfall areas	Fruits variety	No.	√		2				1	1
High rainfall areas	Fiber crops variety	No.	√		4		1	1	1	1
High rainfall areas	Tea crops variety	No.	√		2				1	1
High rainfall areas	Coffee crop variety	No.	√		3			1	1	1
Low rainfall areas	Cereal crops variety	No.	√		21	3	8	4	4	2
Low rainfall areas	Pulses variety	No.	√		5	1	1	1	1	1
Low rainfall areas	Oil crops variety	No.	√		2	-	-	-	1	1
Belg farming	Cereal crops variety	No.	√		3			1	1	1
Belg farming	Pulses variety	No.	√		3			1	1	1
All	Crop protection technology for cereals	No.	√		19		6	4	3	6
All	Crop protection technology for pulses	No.	√		13		2	5	3	3
All	Crop protection technology for oil crops	No.	√		5		1	2	1	1
All	Crop protection technology for fiber crops	No.	√		2				1	1
All	Crop protection technology for vegetables and flowers	No.	√		43	14	1	12	1	15
All	Crop protection technology for fruits	No.	√		9	1	4	1	1	2
All	Crop protection technology for spices	No.	√		4		2	1		1
All	Crop protection technology for root crops	No.	√		8			4		4
All	Crop protection technology for coffee and tea	No.	√		3			1	1	1
All	Agronomic practices for cereals	No.	√		17	-	3	7	6	1
All	Agronomic practices for pulses	No.	√		4	-	-	-	2	2
All	Agronomic practices for oil crops	No.	√		3	-	-	-	1	2
All	Agronomic practices for fiber crops	No.	√		4			1	2	1
All	Agronomic practices for	No.	√		3	-	1	-	1	1

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
	vegetables and flowers									
All	Agronomic practices for fruits	No.	√		10	2	2	2	2	2
All	Agronomic practices for root crops	No.	√		6			2	2	2
All	Agronomic practices for tea	No.	√		3			1	1	1
All	Agronomic practices for coffee	No.	√		4				2	2
	Technical manual for cereals	No.	√		6	-	3	2	1	-
	Technical manual for oil crops	No.	√		3	-	-	2	-	1
	Technical manual for vegetables	No.	√		3	-	1	-	1	1
	Technical manual for fruits	No.	√		7	1	1	1	2	2
	Technical manual for aromatic and medicinal crops	No.	√		1			1		
	Technical manual for tea	No.	√		1			1		

Annex 3: Livestock Research sector goals

Potential areas	Technology	Unit	Technology Source		Goal	Year				
			Local	Imported		2006	2007	2008	2009	2010
High rainfall areas	Develop improved poultry breeds capable of producing over 200 eggs/year & hybrid meat breeds that could also produce 150-200 eggs per year	No.		√	4				2	2
High rainfall areas	Adoption and release of hatcheries working with gasoline	No.		√	2				1	1
All	Develop technologies for producing tilapia fish species via the use of floating cage culture	No.		√	6	-	1	1	2	2
High rainfall areas	Development of nutritional technologies that improve milk, meat & reproductive performance of large ruminants	No.	√		4	1	1	1	1	-
High rainfall areas	Generation of technologies that enhance the utilization of crop & industrial byproducts	No.	√		8	2	2	2	1	1
High rainfall areas	Development of grass, legume, multipurpose tree improved varieties	Variety	√		11	-	3	2	3	3
High rainfall areas	Generate appropriate technologies & information that are remedy for constraints to the use & management of honey and honey products	No.	√		10	1	3	1	2	3
High rainfall areas	Generate information on the species &	No.	√		1	-	-	-	1	-

Potential areas	Technology	Unit	Technology Source		Goal	Year				
			Local	Imported		2006	2007	2008	2009	2010
	distribution of sting-less bees									
High rainfall areas	Epidemiological study of Foot & Mouth disease and Bovine Tuberculosis and development of their control strategies	No.	√		2	-	-	1	1	-
High rainfall and moisture stress areas	Generate control strategies for backyard poultry diseases	No.	√		1	-	-	-	1	-
All	Identify factors affecting milk and meat quality and safety	No.	√		3	-	1	1	1	-
All	Develop technique for testing live cattle tapeworm	No.	√		1	-	1	-	-	-
All	Control of the transmission of East Coast Fever from Sudan & Kenya to Ethiopia via continuous boarder surveillance & data collection	No.	√		3	-	-	-	-	3
High rainfall and moisture stress areas	Evaluation & selection of trypanotolerant & more productive cattle breeds among from indigenous breeds	No.	√		2	-	-	1	-	1
High rainfall areas	Evaluate the efficacy & quality of available vet drugs in the market in the country and produce information for policy guide	No.	√		4	-	1	1	1	1
All	Certify live animals and animal products for export markets and conduct sample laboratory analysis for	No.	√		5600	-	1400	1400	1400	1400

Potential areas	Technology	Unit	Technology Source		Goal	Year				
			Local	Imported		2006	2007	2008	2009	2010
	isolation of causative agents of livestock disease outbreaks									
High rainfall areas	Develop sheep breed capable of reaching 30kg at yearling weight	No.	√		1					1
All	Generate technologies that improve meat & skin quality of sheep and goats for export markets	No.	√		3				2	1
All	Evaluation & identification of cattle breed suitable for modern beef production from among indigenous breeds	No.	√		1					1
All	Generate technology/information that enhances the quality of cattle meat and hide	No.	√		1			1		
All	Develop feeds and feeding technology for fish farming	No.	√		1	-	-	1	-	-
All	Develop appropriate technologies for aquaculture	No.	√		1	-	-	1	-	-
All	Generate information on economically useful fish resources, utilization method & level of pollution in lakes Tanna, Ziwai, Langano and Koka	No.	√		9	-	1	2	3	3
All	Develop appropriate technologies for aquaculture	No.	√		7	-	1	2	2	2
All	Identification & documentation of fish	No.	√		3	-	-	1	1	1

Potential areas	Technology	Unit	Technology Source		Goal	Year				
			Local	Imported		2006	2007	2008	2009	2010
	species in Blue Nile, White Nile, Omo-Gibe, Wabi Shebele and Tekeze Basins, Rift Valley Lakes and Tanna									
High rainfall and moisture stress areas	Generate information on factors contributing to post harvest loss of fish in lakes Ziway, Koka & Tanna and control methods	No.	√		6	-	1	1	2	2
High rainfall areas	Develop technologies that enhance the production & productivity of dairy cows	No.	√		2	-	1	-	1	-
High rainfall areas	Develop technologies from herbs that prolong the shelf life of milk and milk products	No.	√		3	1	-	1	-	1
High rainfall areas	Generate information on the draft capacity of indigenous and crossbred oxen	No.	√		4	-	1	2	-	1
High rainfall areas	Generate information on the draft suitability and the capacity of oxen and horses in combination with different farm implements	No.	√		4	-	1	2	-	1

Annex 4: Pastoral and agro pastoral Research Sector Goals

Potential areas	Technology	Unit	Technology Source		Goal	Year				
			Local	Imported		2006	2007	2008	2009	2010
Low Rainfall areas	High Yielding drought resistant pearl millet variety		√	1		1				
Low Rainfall areas	High Yielding drought resistant Ming bean variety	√	√	2		2				
Low Rainfall areas	High Yielding drought resistant sorghum variety	√		4		1	1	1	1	
Low Rainfall areas	High Yielding drought resistant Maize variety	√		8	2	2	2	2	2	
Low Rainfall areas	High Yielding drought resistant Rice variety	√		5		1	2	1	1	
Low Rainfall areas	High Yielding drought resistant Teff variety	√		3	1		1	1		
Low Rainfall areas	High Yielding drought resistant Cowpea variety	√		1		1				
Low Rainfall areas	High Yielding drought resistant pigeon pea variety	√		1		1				
Low Rainfall areas	High Yielding drought resistant sesame variety	√		1					1	
Low Rainfall areas	High Yielding drought resistant groundnut	√		1				1		



Potential areas	Technology	Unit	Technology Source		Goal	Year				
			Local	Imported		2006	2007	2008	2009	2010
	variety									
Low Rainfall areas	Improved water conservation technology, Improved Crop production system, type and amount of fertilizer in hectare, sloughing and Improved crop management methods	√		10		4	3	2	1	
Low Rainfall areas	Rain fall prediction model development for the purpose of decision making process in the dry land areas, Developing National agro-climatologically map for Agricultural Research purpose, developing map for seasonal rainfall characteristics around Melkassa, Metrological data base and determination of crop water requirement for major crops in the dry land areas.	√		5		1	1	2	1	
Low Rainfall areas	Water harvesting activities	√		2				1	1	
Low Rainfall areas	Integrated soil fertility and crop nutrient uptake (utilization)	√		2				1	1	
Pastoral areas	Intercropping Forage crops Versus Cereal Crops and Others	√		1				1		
Pastoral areas	Planting and Cutting methods of forage crops	√		1					1	
Pastoral areas	Rain-fed & irrigated varieties of forage legumes and grasses.	√		7			2	3	2	

Potential areas	Technology	Unit	Technology Source		Goal	Year				
			Local	Imported		2006	2007	2008	2009	2010
Pastoral areas	Information On: Feeding improved forage crop varieties for better growth performance and milk production of goat - Afar Sheep trait characteristics - Breeding characteristics and Milk production of Afar & Somali Camels. - Distribution of tuberculosis on camels. -Effect of poisonous plants on camel production - Camel production and marketing	√		6				2	4	

Annex 5: Soil and Water Research Sector Goals

Potential areas	Technology	Unit	Technology Source		Goal	Year				
			Local	Imported		2006	2007	2008	2009	2010
High rainfall areas	MPTs for soil amelioration		√	5			2	2	1	
High rainfall areas	Deficit water use and performance of tomato, chickpea, onion and potato.	√		5		2	1	2		
High rainfall areas	Deficit water use for potato under water harvesting system of small scale irrigation at Jeldu	√		1			1			
High rainfall areas	Indigenous soil and water conservation practices at Jimma, Dbre Zeit and Pawe	√		3	2		1			
High rainfall areas	Integrated watershed management in Yerer, Bishida and Arsi	√		3				3		
High rainfall areas	Soil conservation measures for gully stabilization	√		1		1				
High rainfall areas	Conservation tillage practices & crop performance under Nitosols conditions	√		1			1			
High rainfall areas	Land suitability, land productivity around Alemaya and Adele lakes	√		1			1			
High rainfall areas	Soil and water	√		2		1			1	

Potential areas	Technology	Unit	Technology Source		Goal	Year				
			Local	Imported		2006	2007	2008	2009	2010
	conservation measures for Yerer and Haru									
Low Rainfall areas	Evaluation of water harvesting techniques for Debre Zeit &Chefe Donsa	√		2		1			1	
Low Rainfall areas	Soil loss and runoff under different management practices around Meiso area	√		1			1			
Irrigated areas	Different irrigation regimes for rice, cotton onion, orange, mardarine, maize, sorghum, potato, tomato, beans, rosemary, mint I middle Awash & wondo Genet.	√		13		2	5	2	4	
Irrigated areas	Irrigation scheduling for cotton sesame, maize, beans, sorghum, onion, tomato, in middle awash.	√		7		2	2	3		
Irrigated areas	Information on the use of coffee processing effluent for irrigation	√		2			2			
Irrigated areas	Information of large scale and small scale irrigation	√		5					5	
High rainfall areas	Starus of micronutrients in Nitosols, Cambisols, vertisols, &fluvisols	√		4		1	1	1	1	
High rainfall areas	Chemical fertilizer rate for wheat, tef, fafa bean, and field pea	√		4		1	1	1	1	
High rainfall areas	Soil based frtilizer recommendation for wheat and teff	√		2		1	1			
High rainfall areas	Response of teff for K fertilizer at Akaki,	√		1			1			

Potential areas	Technology	Unit	Technology Source		Goal	Year				
			Local	Imported		2006	2007	2008	2009	2010
	Alemtena, Minjar									
High rainfall areas	Information of soil nutrient contents	√		1			1			
High rainfall areas	N and P fertilizer rate for linseed	√		1			1			
High rainfall areas	Soil acidity amelioration options	√		1				1		
High rainfall areas	Phosphorus solubilizing microorganisms identified	√		3	1		1		1	
High rainfall areas	Nitrogen fixing bacteria for grain legumes	√		7			3		4	
High rainfall areas	Vermi-compost of urban wastes for soil amelioration	√		3		1		1	1	
Moisture stress areas	Contribution of gypsum and nitrogen on cotton yield	√		1		1				
Moisture stress areas	Vermi-compost of urban wastes for soil amelioration	√		3		1		1	1	
Moisture stress areas	N fixing bacteria for haricot bean and ground nuts	√		2	1		1			
High rainfall areas	Digital soil map of Dbre Brhan, Assosa R.C. & Wondo Genet			3		3				
High rainfall areas	Digital soil map of Humera, Axum, Maytsemri R.C.			3		3				
High rainfall areas	Digital soil map of Bonga, Gambella, Yabelo			3			3			
High rainfall areas	Digital soil map of Gode and Semera			2					2	

Annex 6: Forest Research Sector Goals

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
Adequate rain fall areas	Introduce and propagate four species of wasps to control <i>Juniperus</i> aphides and collect information on the wasps' ability in controlling the expansion of the aphides	Number of information		√	1				1	
Adequate rain fall and inadequate rain fall areas	Introduce different tree species and study the site suitability/matching/ and growth to select the provinances with best growth performance	Number of trees		√	8		3		4	1
Adequate rain fall areas	Improved progenies of <i>Juniperus procera</i> , <i>Grevillea robusta</i> , and <i>Prunnus africana</i> with better growth performance identified	No.	√		6		2	2		2
Adequate and inadequate rain fall areas	Tree species of multiple uses and better growth performance on high land vertisols and suitable for central	types of trees/shrubs	√		11		2	6		3

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
	low lands of the country identified.									
Adequate rain fall areas	Guidelines/models used for the determination of better production, management and rotation age of <i>Cupressus lucitanica</i> developed	Number of Guidelines	√		1		1			
Adequate rain fall areas	Technologies used for the domestication and propagation of the less utilized indigenous trees/shrubs (Bamboo, <i>Trilipsum</i> and <i>Vitellaria spp.</i> ) developed	Number of technologies	√		4				2	2
Adequate rain fall areas	Tree species and management technologies that can improve the soil fertility, production and productivity of four cereal crops identified	No. of technology	√		5		1	2		2
Adequate rain fall areas	Information on site suitability for mixed plantation (fruit trees vs.tree crops) generated	Number of sites	√		3			3		
Adequate rain fall areas	Technology used to improve the natural regeneration ability of bamboo generated	No. of technology	√		1	1				
Adequate rain fall areas	Information on fungal attacks on lumber produced from nine indigenous and three exotic tree species and methods on how to	Number of technologies generated	√		2			1	1	

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
	improve the durability of these lumbers generated									
Adequate rain fall areas	Nutrient cycling, fuel and fodder use of selected indigenous tree species identified	Number of information generated	√		3		3			
Adequate rain fall areas	Information on area coverage, content and regeneration status of two indigenous tree species ( <i>Prunus africana</i> , and <i>Ocotea Kenyensis</i> ) generated	Number of info. generated	√		2				1	1
Adequate rain fall areas	Impact of rotation age, planting site and tending operations on lumber quality and service of <i>Cupressus luitanica</i> known	No. of technology	√		1				1	
Adequate rain fall areas	Technologies suitable for the production of edible and medicinal mushrooms using agricultural residues and forest by products generated	No. of technology	√		2		1		1	
Adequate rain fall areas	Technologies used for the various alternative use of lumbers produced from <i>Eucalyptus deglupta</i> and <i>Juniperus procera</i> identified	No. of technology	√		2		2			
Adequate rain fall areas	Technology required for the conversion of round bamboo into lumber used for construction, furniture and office equipment generated	No. of technology	√		1					1



potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
Adequate rain fall areas	Technologies for the development of glue laminated lumber boards suitable for the construction of columns and beams generated	No. of technology	√		1		1			
Adequate rain fall areas	Technologies for the development of laminated boards from forest by products and agricultural residues suitable for the construction of houses generated	No. Of technology	√		1				1	
Adequate rain fall areas	Information on the types of non-timber forest products, grown in natural forest, their socio-economic benefits, relationship with the total environ and contributions identified	Number of information collated	√		3		1	1		1
Adequate rain fall areas	Technologies suitable for the production of essential oils from various trees/shrubs, valuation of content and quality identified	Number of technologies identified	√		4		1	1		2
Adequate rain fall areas	The phenology, fruiting, and seed maturity period of various trees growing in different agro ecologies identified. Moreover, technology required to improve the germination power and storability of seeds collected from	Number of trees	√		11		6	4	1	

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
	different indigenous trees found.									
Adequate rain fall areas	Best seed sources (mother trees) will be identified by comparing the germination ability of seeds and nursery performance of seedlings collected from different seed sources of indigenous trees grown in different agro-ecological zone	Number of trees	√		3	3				
Low rain fall areas	Pot sizes suitable for the development of <i>Eucalyptus camaldulensis</i> and <i>casuarina equisetifolia</i> identified	Number of technologies	√		2	1	1			
Low rain fall areas	Mixed plantation methods and pot sizes suitable for rehabilitation and development of seedlings for re-afforestation of degraded lands identified.	Number of technologies	√		4		2	1	1	
Low rain fall areas	Tree species and management technologies that can improve the soil fertility, production and productivity of two cereal crops identified	Number of technologies	√		2		1		1	
Low rain fall areas	Technologies required for rehabilitation of degraded lands and	Number of technologies	√		4				1	3

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
	restoration of degraded acacia wood lands identified									
pastoral areas	Information on the nursery and field performance of trees species used for animal fodder, in Borena zone generated	Number of information	√		2			2		
Pastoral areas	Information on the extent of gum and camphora producing trees/shrub species, mode of production, characteristics of products and market generated	Number of information	√		4				2	2

Annex 7: Biotechnology Research Sector Goals

Potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
Preparation of rapid propagation protocol for the following- coffee, pineapple, cardamom, vanilla, potato, enset, geranium, pyrethrum, citrus, banana, garlic	No. of technologies	√		16	2	3	4	4	3	
Pineapple technology multiplication*	No. of seedlings in millions	√		7.3	0.001	0.6	2.2	2.2	2.3	
potato technology multiplication*	No. of seedlings in millions	√		0.6		0.02	0.03	0.05	0.5	
Coffee technology multiplication*	No. of seedlings in millions	√		3.1			0.1	0.5	2.5	
preparation of technologies to multiply cross bred cows	No. of technologies	√		2		1		1		
Preparation of Bio fertilizer for selected soybean strains	No. Of technologies	√		2		1		1		
Mass inoculants production and packaging for Bio-fertilizer	Inoculants Quantity (Kg)	√		4.1		0.1	0.5	1.5	2	

❖ The multiplication work will not be limited to these only but can be extended to any commodity as soon as the right protocol is obtained and the necessary facilities for mass production are in place.

Annex 8: Agricultural Mechanization Research Sector Goals

Potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
High and low rainfall areas	Cotton planter	√		1	1					
High and low rainfall areas	Papaya harvester	√		1	1					
Low rainfall areas	Tomato seed extractor	√		1	1					
High rainfall areas	Amicho pulverizer	√		1		1				
High and low rainfall areas	Cotton delinator	√		1			1			
High and low rainfall areas	Cereals and pulses winnower	√		1				1		
High and low rainfall areas	Extruder	√		1					1	
High and low rainfall areas	Bean thresher	√		1					1	
Pastoral areas	Feed mixer	√		1					1	
High rainfall, low rainfall and pastoral areas	Product catalogue with briefing about the implements specification, use and price	√		2	1				1	

Table 9: Food Science and Post harvest Technologies Research Sector Goals

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
All	Technologies for extending the shelf life of fruits and vegetables	√		4	1	1	1	1		
All	Weaning food formulations	√		2			1	1		
All	Rapid objective indicators for making quality food products	√		2	1		1			
All	Information on food processing quality attributes on varieties differences	√		5	1	1	1	1	1	

Annex 10: Socioeconomics Research Sector Goals

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
Information on adoption and impact of bread wheat, rapeseed, haricot bean and dairy technologies	√		4		2	2				
Information on impact of technological change & productivity on livelihood of farmers	√		1				1			
Information on adoption of technologies released and distributed to farmers between 1995-1998 E.C.	√		1					1		
Information on productivity and profitability of crops produced in Arsi, rift valley, east and west Shoa and Asosa	√		5	1	1		2	1		
Information on productivity, profitability and marketing system of small scale production in Ada-Liben district	√		1	1						
Information on economic feasibility	√		1			1				

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
of using farm yard manure as fertilizer than as household energy										
Information on risk management practices of farmers in east and west Shoa	√		1				1			
Information on marketing of processed potato (Chips)	√		1	1						
Information on cross-boarder livestock marketing	√		1		1					
Information on seed system in central Ethiopia by assessing practices of seed producing companies	√		1		1					
Information on live animal and meat export marketing system	√		1					1		
Information on processing and marketing of products demanded in domestic and international markets	√		1	1						
Information on alternative ways of producing and marketing of market oriented good quality outputs along with increasing productivity	√		1	1						



potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
Information on natural, cultural and institutional constraints of farming systems in highland, mid-altitude and lowland areas of Ethiopia	√		2		1	1				
Information on alternative policies and extension strategies for improving productivity and agro-ecological adaptability of crops and livestock's demanded in domestic and international markets	√		1				1			
Information on constraints of sustainable management of natural resources in highland, mid-altitude and lowland areas	√		1					1		

Annex 11: Technology Multiplication

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
Crop varieties										
Irrigated areas	Cotton	Quintal	Basic	2500	300	400	500	600	700	
Irrigated areas	Cotton	Quintal	Pre-basic	1500	200	250	300	350	400	
Irrigated areas	Root crops	Quintal	Pre-basic	650	75	100	125	150	200	
Irrigated areas	Spices	Quintal	Pre-basic	100	10	15	20	25	30	
Irrigated areas	Cereals	Quintal	Pre-basic	2600	100	250	500	750	1000	
Irrigated areas	Aromatic and medicinal plants	Seedlings	Pre-basic	45	-	-	10	15	20	
Irrigated areas	Cotton	Quintal	Breeder	360	50	60	70	80	100	
Irrigated areas	Root crops	Quintal	Breeder	500	50	75	100	125	150	
Irrigated areas	Aromatic and medicinal plants	Quintal	Breeder	42.5	-	5	10	12.5	15	
Irrigated areas	Aromatic and medicinal plants	Seedlings	Breeder	6500		1000	2000	3000	500	
High rainfall areas	Fruits	No.	Seedlings	100000	10000	15000	20000	25000	30000	
High rainfall areas	Coffee	No.	Seedlings	50000	5000	7500	10000	12500	15000	
High rainfall areas	Fruits	No.	Sucker	100000	10000	15000	20000	25000	30000	
High rainfall areas	Cereals	Quintal	Basic	25000	4000	4500	5000	5500	6000	
High rainfall areas	Spices	Quintal	Basic	7500	1000	1250	1500	1750	2000	
High rainfall areas	Oil crops	Quintal	Basic	6250	750	1000	1250	1500	1750	
High rainfall areas	Vegetables	Quintal	Basic	62	7	10	12	15	18	
High rainfall	coffee	Quintal	Basic	450	80	85	90	95	100	

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
areas										
High rainfall areas	Potato	No.	Basic	3500	600	650	700	750	800	
High rainfall areas	Fruits	No.	Cutting	100000	10000	15000	20000	25000	30000	
High rainfall areas	Cereals	Quintal	Pre-basic	15000	2000	2500	3000	3500	4000	
High rainfall areas	Pulses	Quintal	Pre-basic	2500	400	450	500	550	600	
High rainfall areas	Oil crops	Quintal	Pre-basic	1750	250	300	350	400	450	
High rainfall areas	Vegetables	Quintal	Pre-basic	36	5	6	7	8	10	
High rainfall areas	Potato	No.	Pre-basic	2500	400	450	500	550	600	
High rainfall areas	Cereals	Quintal	Breeder	585	100	110	120	125	130	
High rainfall areas	Pulses	Quintal	Breeder	600	100	110	120	130	140	
High rainfall areas	Oil crops	Quintal	Breeder	175	25	30	35	40	45	
High rainfall areas	Vegetables	Quintal	Breeder	15	1	2	3	4	5	
High rainfall areas	Potato	No.	Breeder	1500	200	250	300	350	400	
Livestock technologies										
High rainfall areas	Dairy heifers	No.		200	30	35	40	45	50	
High rainfall areas	Dairy bulls	No.		50	10	10	10	10	10	
High rainfall areas	Day old chicken	No.		7500	1000	1200	1500	1800	2000	
High rainfall areas	Fertile eggs	No.		4950	500	750	1000	1200	1500	
High rainfall areas	Fish fries	No.		100000	10000	15000	20000	25000	30000	

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
Forest trees varieties										
High rainfall areas	Improved and quality seeds collected from 40 indigenous and exotic tree species, growing in different agro ecological zones distributed to clients	Kg		40000	8000	8000	8000	8000	8000	
High rainfall areas	forest seeds	Tone		46	7	8	9	10	12	
High rainfall areas	Forest tree seedlings	No.		57500	5000	7500	10000	15000	20000	
High rainfall areas	Seed stand established	Ha		40		5	10	15	10	
Agricultural mechanization implements										
High and low rainfall areas	Cotton planter	No.		3	3					
High and low rainfall areas	Papaya harvester	No.		5	5					
Low rainfall areas	Tomato seed extractor	No.		3	3					
High rainfall areas	Amicho pulverizer	No.		3		3				
High and low rainfall areas	Cotton delinator	No.		3			3			

Annexe 12: Pre-extension demonstration activities

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
Moisture-reliable and unreliable areas	Conduct pre-extension technology transfer and evaluation	No of technologies	150*	36	38	43	46	47		
Moisture-reliable and unreliable areas	Training of subject matter specialist, Extension workers/development agents, selected farmers	Number of trainees	10955	1660	2062	2175	2425	2634		
Moisture-reliable and unreliable areas	Provide training on how to make food recipe	No of training	6	1	2	1	1	1		
Moisture-reliable and unreliable areas	Preparation of extension materials (manuals, leaflets, posters, etc.)		139	30	19	11	41	38		
Moisture-reliable and unreliable areas	Sharing of experience and information among relevant stakeholders (consultative workshop, exhibition, traveling workshop, visits, field days, etc.)	Number of forums	75	39	39	39	39	39		

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010

\* Since one technology can be demonstrated more than one year, the numbers may not be necessarily summed up

Annex 13: Agricultural technology scaling-up and out activities

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
Moisture-reliable and unreliable areas	Pulse crops /Haricot bean, Lentil, Chickpea, faba bean, Field pea, Soyabean, soybean bio-fertilizers/	No. of participant farmers	3522	3690	759	835	918	1010		
Moisture-unreliable areas			1822	300	330	363	399	430		
Moisture- reliable areas	Cereals / Durum wheat, finger millet, highland maize, malt barely, sorghum/	No. of participant farmers	2936	481	529	582	640	704		
Moisture-unreliable areas			4965	814	895	984	1082	1190		
Moisture- reliable areas	Oil crops /Sesame, ground nut, nug, linseed, gomen zer/	No. of participant farmers	1220	200	220	242	266	292		
Moisture-unreliable areas			492	81	89	98	107	117		
Moisture- reliable /for irrigated/ areas	Vegetable /Onion/	No. of participant farmers	791	130	143	157	172	189		

potential areas	Technology	unit	Technology Source		Goal	Year				
			local	Imported		2006	2007	2008	2009	2010
Moisture- reliable areas	Root crops / sweet potato, potato, cassava)	No. Of participant farmers	1589	261	287	315	346	380		
Moisture- reliable areas	Fruit crops / papaya, Avocado, banana, pine apple/	No. Of participant farmers	757	124	136	150	165	182		
Moisture- reliable areas	Essential oils and medicinal crops (pyrethrum, arthemisia)	No. Of participant farmers	1831	300	330	363	399	439		
Moisture- reliable areas	Livestock feed, forage crops, poultry production, sheep rearing, dairy cow	No. Of participant farmers	2060	260	290	312	436	762		
Pastoral areas			766	125	138	152	167	184		
Moisture- reliable areas	Poultry	No. Of participant farmers	85	7	10	15	23	30		
Addis Ababa and surrounding areas	Animal health / hide and skin pest control/	No. Of participant farmers	304	50	55	60	66	73		
Moisture- reliable areas	Acid soil management	No. Of participant farmers	1463	240	264	290	319	350		
Moisture-reliable and unreliable areas	Forestry technologies/ Boswellia p. (incense) tapping technology Acacia Senegal, Eucalyptus, degraded land rehabilitation frame forestry/	No. Of participant farmers	304	50	55	60	66	73		
Moisture-unreliable areas	Aquaculture technologies in small water bodies	No. Of participant farmers	95	15	17	19	21	23		

