Fogera Woreda
Pilot Learning Site
Diagnosis and Program Design

January 2005

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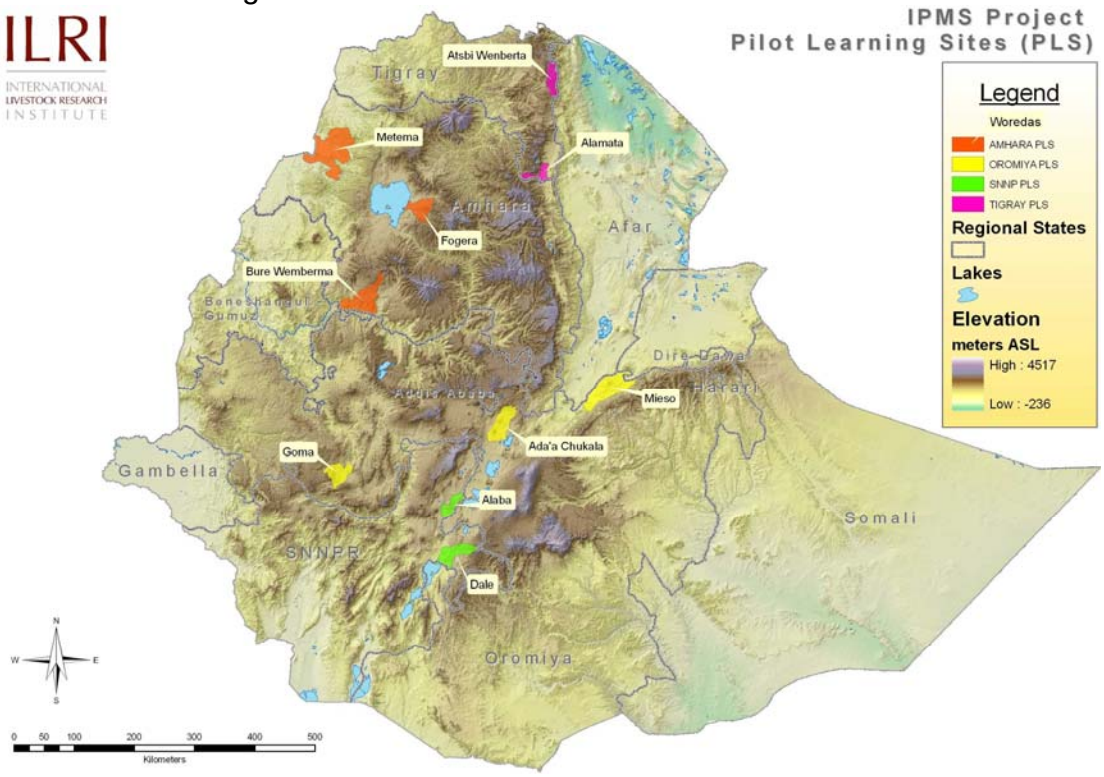
1. Introduction

The International Livestock Research Institute (ILRI) and the Ministry of Agriculture (MoA) initiated a 5 year project in June 2004 with the financial assistance from the Canadian International Development Agency (CIDA). The project, entitled: "Improving productivity and market success" (IPMS) of Ethiopian farmers, aims at contributing to a reduction in poverty of the rural poor through market oriented agricultural development.

The IPMS project will assist by bringing knowledge on technologies generated by International and National Research Institutes as well as from other sources to the attention of the technology transfer agents and the farming community. It will also facilitate the feedback on these technologies. Such assistance will be provided to 10 pilot learning sites (PLS) across the country; (See map 1). Fogera district is one of the 10 sites selected. To further enhance the utilization of such knowledge and the introduction of technologies, the IPMS project will also provide assistance to extension, input supply, marketing and finance institutions, including cooperatives. Such institutional support will be in the form of technical assistance, capacity building, supply of demonstration and training materials, some limited funds for innovative institutional arrangements and studies aimed at developing innovative institutional arrangements.



Map 1. The 10 Project Pilot Learning Sites (PLSs) in the Four Regional States

2. Farming systems, crop and livestock priorities

2.1. Description of Fogera Woreda

Fogera Wereda is one of the 106 Woredas of the Amhara Regional State and found in South Gondar Zone. It is situated at $11^{0}58$ latitude and $37^{0}41$ longitude. Woreta is the capital of the Woreda and is found 625 Km from Addis Ababa and 55 Km from the Regional capital, Bahir Dar. Woreta and Alem Ber are two major towns in the Woreda. Both towns have supplies of potable water and electric power. Woreta town has also telephone service. Telephone service will soon be installed in Alem Ber town. The Woreda has 17 Km of asphalt road that crosses the town, There are also 38 Km of all weather road and 67 Km of dry weather road. The Woreda is divided into 25 rural Peasant Associations (PAs) and 5 urban Kebeles.

The total land area of the Woreda is 117,405ha. Flat land accounts for 76%, mountain and hills 11% and valley bottom 13%. Average land holding is about 1.4 hectare with a minimum and maximum hectare of 0.5 and 3.0 hectares respectively (see annex 1.1 and 1.2). The total human population of the Woreda is 233,529. The rural population is estimated at 206,717. The proportion of male and female population is almost similar in both rural and urban areas. The number of agricultural households is 42,746.

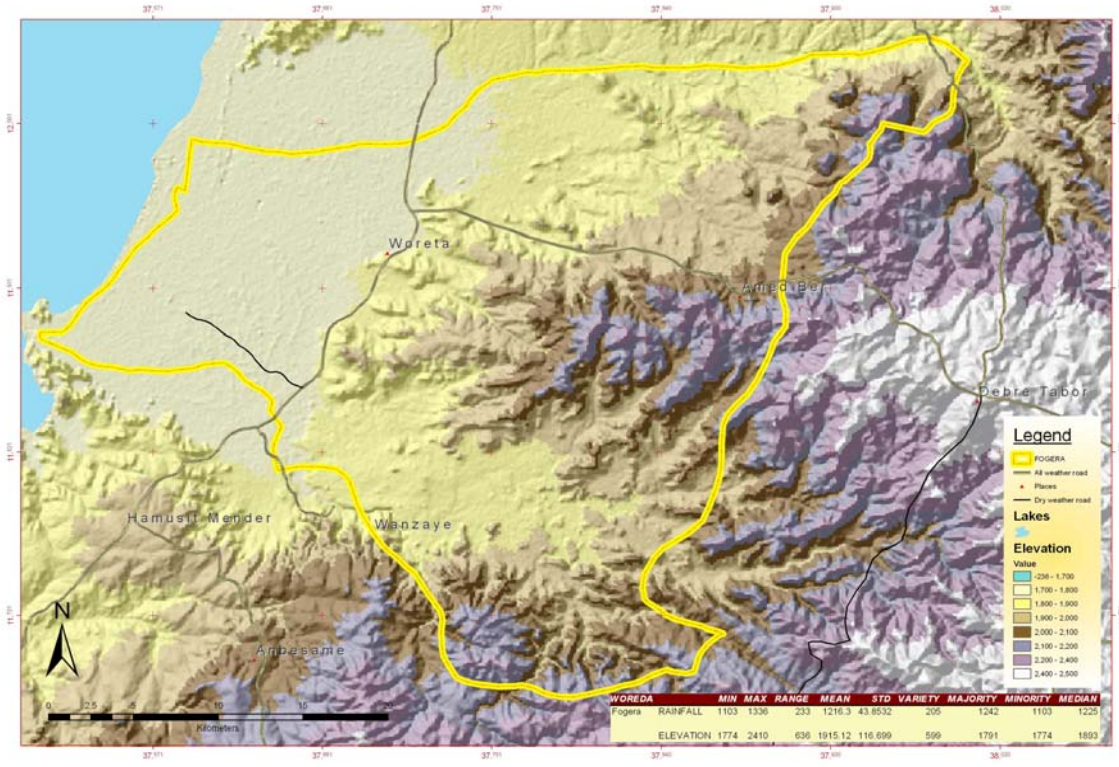
Table 1. Total population by holders and sex

Holders	Total Population			Agricultural Household		
	Male	Female	Total	Male	Female	Total
Rural	105,726	100,991	206,717	38,471	13,138	42,746
Urban	13,674	13,138	26,812	-	-	-
Total	119,400	114,129	233,529	38,471	13,138	42,746

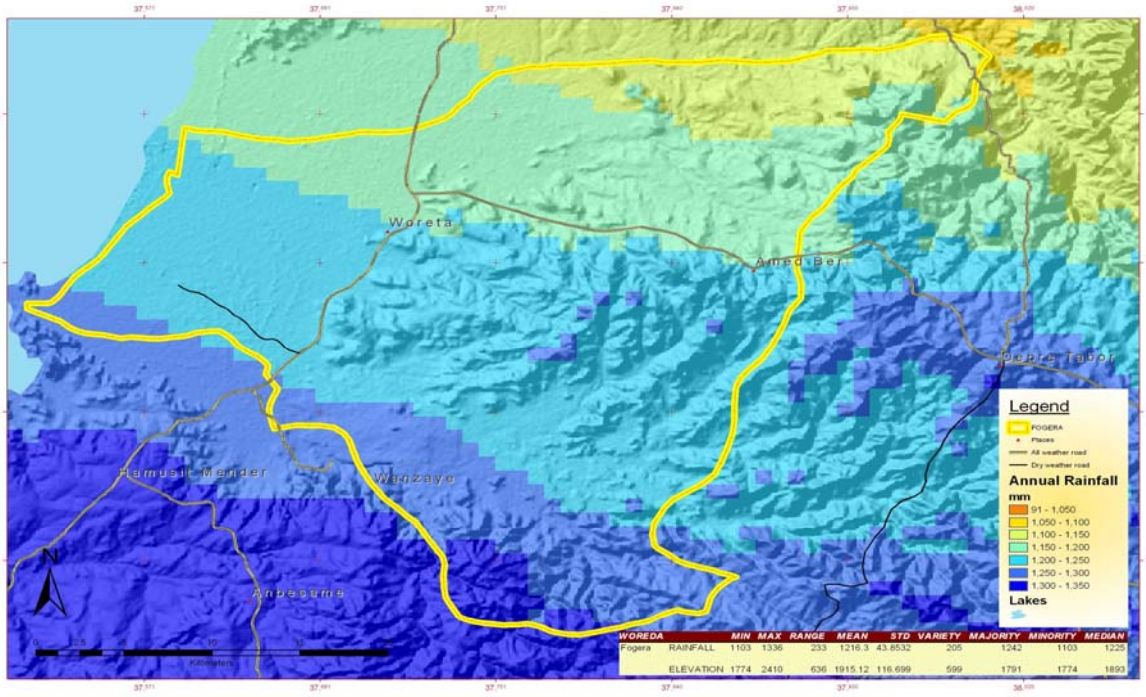
Source: Fogera Woreda, OoA

Fogera woreda is endowed with beautiful diverse natural resource, with capacity to grow diverse annual and perennial crops. The woreda is one of the eight Woredas bordering Lake Tanna and has an estimated water body of 23,354 ha. The Woreda is classified as one of the surplus productive Woredas in the Region. Altitude (Map 3) ranges from 1774 to 2410 masl and is predominantly classified as Woinadega ecology.

The mean annual rainfall is 1216.3 mm and ranges from 1103 to 1336 mm (Map 3). There is no rain gauge at the woreda level and hence is difficult to monitor proper agricultural planning. Belg and Meher are two cropping seasons, with short and long rainy periods respectively. Farmers depend on Meher season rain for crop production.

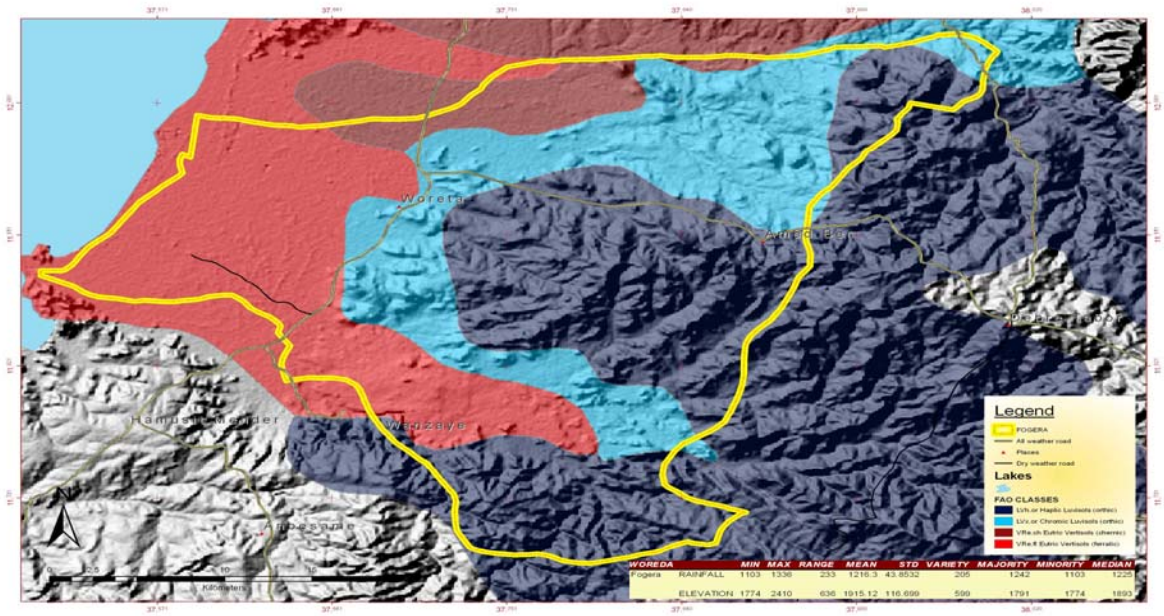


Map 2. Altitude in Fogera Woreda



Map 3. Annual Rainfall in Fogera Woreda

According to the Woreda Office of Agriculture, the dominant soil type in the Fogera plains is black clay soil (ferric vertisols), while the med and high altitude areas are orthic Luvisols (Map 4).



Map 4. Soil types in Fogera Woreda

There are two major rivers that are of great economic importance to the Woreda. These rivers are mainly used for irrigation during the dry season for the production of horticultural crops, mainly vegetables. Some farmers also use water pumps to produce vegetables, cereals and pulses.

- **Gumara River**: Passes through Fuafuat Gajera, Kinti Merewa, Abagunde Sendega, Aba Kiros, Bebeks, Quahr Michiel, Shena Kidist Hanna, Wagatera and Guramba PAS.

- **Reb River** -Passes through Wetemb, Addis Betekerstian, Reb Gebriel, Debasi Fatra, Abana Kokit, Shaga, Naber and Shina PAS and ends into Lake Tana.

There is one high school (grade 9-10), 4 junior secondary schools (grade 5-8) and 28 elementary schools in the Woreda. There are one health center, 7 clinics and 2 health posts are found in the woreda. Health posts are located in the rural areas. Some farmers have been trained to teach farmers on basic health care such as precaution measures against malaria, construction of latrine pits, birth control, first aid, HIV/AIDs etc. The Commercial Bank of Ethiopia operates in the Woreda capital, Woreta.

The Woreta Agricultural Technical and Vocational Training Centre (TVET) is found in the outskirts of the town. It is situated on top of a hill overlooking the beautiful Fogera plains on the way to Bahir Dar The capacity of the college is 2000 students and has graduated 269 students in 2004. Buildings (main administration, classrooms, library, auditorium, recreational areas, staff houses) are currently under construction at a cost of 80 million Birr allocated from

SIDA. The agricultural practical field training facilities include a farm with enough land for horticultural crops, fruit crops, cereal crops, forage crops, agro forestry,
and ornamental plants, Animal facilities include cattle fattening unit, dairy farm, goat farm, skins and hides processing unit, and apiculture, The college shall be operational in its full capacity in 2004/5.

2.2 Priority Farming systems

According to the Woreda Office of Agriculture, there are three agro-ecological Zones in the Woreda which grow different types of crops and are suitable for different species of livestock (Table 2).

Table 2. Farming System by Ecological Zone in Fogera Woreda

Altitude range (masl)	**No of PAs**	Dominant crop and livestock
1700-1800	8	Rice, Finger millet, horticultural crops, noug, fish, cattle, sheep
1900 – 2000	15	Cereals (maize, teff, finger millet), noug vegetables, apiculture, cattle, goats.
2000 – 2400	2	Barley, Horse beans, potato, apiculture, sheep, cattle
Total	25	

Source: Fogera Woreda, OoA

However, the IPMS team has identified two major farming systems that have relevance to market-oriented production system in the Woreda.

1. **Rice/Fish/Horticulture/Livestock System (Hereafter referred to as Rice/Fish/Livestock system)**

The system is found north of the main road transecting the Fogera Woreda This area is known as the Fogera Plains and used to be a livestock production area until recently. The area gets flooded during the wet season and is not accessible. Farmers along the coats of Lake Tanna are also fishermen and use traditional way of fishing using papyrus boats.

Rice production has been introduced some five years ago in the Fogera plains and currently about 4,516 ha of land is under rice cultivation using the X-Jigna variety. A number of other crops such as noug, finger millet, teff are also produced in this area. During the dry season, much of the area is left for livestock grazing (Map 5). The major animal diseases in the area are trypanosomes, liver fluke, gastro intestinal parasites. Biting flies are also major problem in the area and restrict animal grazing. Horticultural crops production, particularly onion, is becoming a major agricultural activity during the dry season using irrigation.

Map 5. Crop and livestock production in the Fogera plains

2. Cereals/Oil crops/Horticulture/Livestock/Apiculture system (Cereal/Horticulture/Apiculture system)

This system is found southern part of the road transecting Fogera. The terrain varies from relatively flat bottomlands to mid and high altitude areas. The dominant soil type in this area is luvisols. This system is dominated by cereals (maize, Finger millet, tef), horticultural crops (mainly pepper), and oil crops (mainly noug). Cattle, sheep, and goats are the major ruminants in the area. There is a long tradition of honey production in this area and some farmers own up to 250 traditional beehives (Map 6).

Map 6. Maize and pepper production and apiary in the mid and high altitude areas

2.3 Priority crop commodities

The crops that are grown in these two farming systems are as follows:

System 1 – Fogera plains

- Cereals (Rice, Teff, Maize)
- Pulses (Chick pea, Lentil)
- Spices (Fenugreek, Basil, Coriander)
- Horticulture (onion, garlic, pepper and tomatoes)
- Noug, safflower

System 2 – Mid and highlands

- Cereals (finger millet, maize, teff and barley),
- Oil crops (Noug, rapeseed, linseed, groundnut)
- Horticulture (Onion, pepper, tomatoes)
- Sugar cane
- Fruits (Papaya, Guava)

The current major marketable crop commodities in each farming systems as agreed by the Woreda are as follows

System 1

- Rice
- Horticulture (onion, pepper and tomatoes)
- Oil crop (Noug)
- Pulses (chickpea)

System 2

Oil crop (Noug)
Horticulture (pepper, tomato, onion)

System 1: Rice Production

Rice grown during the main rainy season and is planted in June. Rice was introduced to the Woreda in 1987 E.C. with 30 farmers in two PAs on 6 ha of land. The average yield was 20 qt/ha. This was subsequently expanded into 5 PAas. Currently, 14 PAs are involved in rice production and this supports about 11,000 households. Average land holding in this system is about 2 ha. The total area under rice is about 3980 ha. The only rice variety used is locally known as X-Jigna. The mean yield is about 35 qt/ha and ranges from 20 to 80 qt/ha depending on the land type and management practices. The Woreda OoA estimates a total yield of 139,300 qt for the 1996/97 cropping season. Price depends on whole or de-hulled rice (de-hulled rice is up to 300 Birr and whole rice is about 180 Birr). The current average market price of de-hulled rice is about 260 Birr/qt. According to the Woreda OoA, there is potential to expand rice production in 28,000 ha of land. Rice straw is used as animal feed and for roof

thatching. Rice hull and rice bran are used as animal feed and is often mixed with a local brewers grain known as '*attela*'. The hull is also used as for cooking and for manufacturing chip wood.

The rice system is well integrated with fish production from lake Tanna and cattle production in the plains. In addition to rice, other major crops grown in this system are teff, maize, noug, safflower, chickpea, lentil, fenugreek, basil and coriander. In the dry season, horticultural crops , mainly onion, garlic, pepper and tomatoes are grown under small scale irrigation.

Systems 1 and 2. Pulses (Chickpeas and Lentil) production

Chickpea and lentil are produced on residual moisture or as relay crops in the Fogera plains and in the bottomlands of the mid and high altitude areas. Production is labour intensive and farmers do not apply fertilizers. Farmers use local varieties and as such there has been no introduction of improved varieties. The major problems reported on chickpeas and lentils include disease (wilt root rot complex), insect (cut worm and African boll worm, aphids) and storage pests such as weevils.

Systems 1 and 2. Horticultural crops production (onion, pepper, tomato)

Horticultural crops production is important in both farming systems. This is a smallholder production system and integrated with cereal crops in both the plains and highland areas. Crops are grown during the wet season under rain-fed conditions and irrigated system during the dry season using hand dug shallow wells (4 –6 meter), rive diversion, treadle pump (just started). There are water use groups for the management of irrigation and water pumps. Drip irrigation has just started with two farmers. Land allocation ranges from 0.06 – 0.75 ha per household. There is a lot of interested farmers in horticultural crops production and contract farming has started with trader. Yield ranges from 8-10 qt/ha and there is price fluctuation.

Availability of seed is a major problem. The price is also high. (improving - support by SIDA) – (Onion - Adama Red – 410 /kg; Red Bombay – 205 Birr/kg; Red croyl – 345.75 Birr/kg. Farmers use fertilizer for vegetative only, soil is OK. Need location specific study on soil fertility. Agro-chemicals – expensive; unavailable, particularly fungicide; poor quality; low efficacy.. Shortage of pump, farm tools and equipment. Farmers indicated that they lack knowledge in river diversion and irrigation system management.

Systems 1 and 2: Oil crop (noug)

To diversify cash income farmers produce different types of oil crop. Although noug is the dominant oil crop, safflower, rapeseed, linseed and groundnuts are produced. In the Fogera plain, noug is planted in the rainy season and is grown on slightly drained areas and in small pockets of patches. In the mid and highland areas, plots are larger. Farmers use local varieties and do not use fertilizer. Parasitic weeds and insect pests are major problems.

2.4 Livestock priorities

The area has very great potential for livestock production. According to the Woreda OoA, the major local livestock resources are cattle (157,128), goats (27,867), sheep (7,607), chicken (246,496), beehives (21,883), donkey (13,189), mule (339) and horse (8) (source: Fogera

OoA, 2004). Exotic breeds include heifer (22), young bull (10), cow (22), calf (3) and improved beehives (19).

Systems 1 and 2: Cattle production

Extensive cattle production is a traditional practices in both farming systems. The Woreda is home of the well-known Fogera cattle breed which originated in the Fogera plains. The breed is large framed and one of the best indigenous milk animals in the country. It is also known for its meat production and traction power. However, the animal is threatened as the number of pure Fogera cattle is decreasing. In addition, it has been crossbred with the local small framed animals such as the Simada. Currently there is a national effort to rehabilitate and conserve this breed. Major animal diseases in order of importance are trypanosomes, internal parasites (liver fluke, lung worm, gastro-intestinal parasites) and external parasite (ticks and flies); anthrax, black leg and foot and mouth disease. Cattle are kept in-house between 11 AM and 3 PM to minimize fly bite. Cattle are mainly kept for traction and milk production. About 29.3 percent of the farmers do not have oxen. There is no experience of fattening cattle.

During the dry season, there is transhumance mode of production from other Woredas such as Derra and Libo. As a result there is genetic dilution and disappearance of of Fogera cattle. The Andassa research center has a Fogera cattle improvement and conservation project through community based breeding system. In addition, there is need to improve the utilization of rice residues for animal feed. The major crop residues used for animal feed include rice and finger millet straws. Grass peas said to be used for fattening animals and is considered to have medicinal value. Fresh (green) maize Stover is not used as green feed by some farmers due to the belief that it causes bloat and breathing problem. Chickpea straw is also believed to cause diarrhea in ruminants.

A total of 54 crossbred animals are available in the Woreda. These include 16 animals in rural areas and 38 animals in urban areas. There is one AI technician in the woreda and has produced about 277 animals through inseminations from 1995 to 2004. So far, there is no bull service in the woreda. The technician give AI service in 6 centers within 10 PAs. Eight farmers have been trained in AI techniques and work in 12 PAs.

The current major marketable livestock priority commodities in each farming systems as agreed by the Woreda are as follows

System 1: Fish, Butter, Beef, Hide

System 2: Apiculture, Butter, Poultry, Beef

System 1: Fish production

The estimated potential of fish production from Lake Tanna is about 10,000-15,000 tones per year. There are eight Woredas bordering Lake Tanna. These are **Bahir Dar Zuria, Dera, Kemekem, Gondar Zuria, Dembia, Alefa, Achefer and Fogera**. There are two fishing sites in Fogera Woreda. These are found in **Wagatera** and **Nabega PAs**. Fishing is based on traditional system using papyrus boats and is limited to the dry season due to problem of access and lack of motor boats. There is a problem of quantity and quality of production for sustainable fish production system. Farmers are not organized into fishermen's groups and as such lack of modern fishing gear and boat and slaughtering, handling, processing and

storage (cold chain) facilities. As a result, the produce is not handled in good hygienic conditions and is of poor quality. Farmers also lack modern fishing skills.

There is an attempt to introduce aquaculture using Tilapia and is practiced in one farm. Although fish farming is suitable with rice farming, appropriate fish species be need to be identified. About 33 farmers have been organized to participate in specialization development fish program. Each has paid 305 Birr to participate in package (fishing gear and boats). There is a problem of illegal fishing by farmers/fishermen from other adjacent Woredas. Fishing Legislation has been approved by the Regional Government and operational procedures are being worked out. It is anticipated that this will deal with illegal fishing, payments of royalty, regulation of fishing procedures, etc. to ensure protection and sustainable production.

The possibility of integration of fish farming with the rice production system is being examined by the Regional Research Institution. Breeding programs have started on barbes, tilapia and cat fish (netch assa) for possible introduction into the farming system.

System 2: Poultry production

Although there are 247,000 local poultry in the Woreda there has been no attempt to improve their management and productivity. All the improvement efforts are being made through the introduction of improved exotic breeds. Pullets (3 months) and day old chicks have been distributed to formers from Andassa government farm at 2 bin/day old chick including 2.5 Kg of feed for 2 months and 6.60 Birr per 5 Cock plus 1 hen.

System 2: Apiculture production

The main apiculture areas are in the mid and highland areas. Almost all production is based on traditional system. There are about 18,980 traditional beehives. Individual farmers own up to 250 traditional beehives

Modern apiculture has just been started and 4 Zander (urban) and 15 transitional (Kenya top bar) beehives have been introduced. Honey yield ranges from 5-10 kg/year in the traditional beehives to about 30 to 50 kg in the improved ones. There is shortage of trained manpower and equipment. There is a decline in bee forages and the Andassa research center is testing introduction of new bee forages including indigenous bee forage plants for the production of unique market product including chemical properties of the honey. ‘Gaja grass’ is one of the unique indigenous bee forages with special qualities. There is a Regional apiary research and training center near Haike town in Wello under Amhara Regional Agricultural Research Institute (ARARI).

Insects (wax moth, ants, argebgabi), pests, mongoose, birds such as bee eater (locally known as nebe bella), lack of supplementary feeding during the dry season, premature harvesting, poor harvesting, handling, storage facilities and system are major problems associated with honey production. Lack of farmer marketing organization affects incomes of farmers. For example honey is sold for about 12 Birr/kg during the dry season and drops to 8 Birr/kg right during harvest in October and November. Most farmers sale their honey to three traders in town who market it in Addis Ababa.

3. Institutions

3.1 Marketing

Cooperatives

The Fogera woreda office of agriculture cooperatives desk, organized under four teams (cooperatives registration and inspection, market and credit, non-agricultural cooperatives promotion which includes credit and saving, house construction cooperative etc, and audit service) is mandated for the organization and development of cooperatives in the woreda.

There are 16 co-operatives in the woreda of which 9 are multi purpose, 4 irrigation and 3 financial cooperatives. Multi purpose cooperatives give milling service, sell basic household goods, distribute agricultural inputs in collaboration with Agricultural Input Supply Corporation (AISCO), Ambasel and Merkeb Union cooperatives. The cooperatives also coordinate financial distribution obtained from commercial bank of Ethiopia in order to purchase agricultural inputs, water pump, livestock production, vegetable seeds etc.

Merkeb Union is a recently established union of service cooperatives and has become strong input supplier like AISCO and Ambasel. The union is located in Bahar Dar town and has 30 cooperative members, one of which is Alember service cooperative from Fogera Woreda.

The Service Cooperatives get 7.5% interest on transaction and the bank gets 5.25 %. Service Cooperatives also buy crop from farmers at harvest time, store and sell when prices are high. Alember and Bebks cooperatives distributed a maximum of Birr 50 and a minimum of Birr 0.35 profit from this venture to their members. Alember cooperative is one of the successful cooperatives and produce farm implement, household furniture, church equipments etc. as a means of additional income generating venture.

The four irrigation cooperatives mentioned above mainly provide input like, seed, farm implements etc, and perform management of irrigation water. They produce vegetables, cereals etc. They also buy vegetable products from farmers, sell and distribute profit to members .

The Gonderber saving and credit co-operative currently has 68 members and a total capital of Birr 18,000. Each member can borrow money 3 times as much as its contribution. Interested members of the cooperatives who would like to take credit should organize themselves in groups. Each member is responsible in the repayment of the credit and farmer as a group are taken as a collateral to each other. So far, they have lent out 6000 Birr at 12% interest rate.

The current capital of the multipurpose cooperatives is about 540,244.45 Birr, irrigation cooperatives 462,153.33 Birr, financial cooperatives 30,379.00 Bir, totaling 1,032,781.78 Birr (see annex 1.4 and 1.5).

Others

Traders from Woreta town, Alem ber and the surrounding areas buy grain, livestock, honey and sell in Bahar dar and other regions. Because of the involvement of intermediaries in the marketing chain, cooperatives could not compete with traders and buy as much products as expected from farmers.

3.2 Input supply

Input supply Desk of the woreda office of agriculture

Major function of the input supply, distribution and follow up desk is to coordinate the purchase and distribution of inputs like vegetable seeds, fertilizer and improved seed (mainly Maize variety Awassa 511). In 2002/03 Teff DZ 32 and DZ 195 used to be distributed to farmers. Supply of these crops has now stopped since price and yield had no significant difference when compared with local varieties. Wheat has no large scale demand because of incongruous soil type and less familiarity of farmers to the crop. Maize BH 660 and BH 140 input price was found too high. Because of these and other reasons input is restricted to Awassa 511. follow up and field supervision is conducted by the input supply desk together with the DA in areas where germination performance is reported to be poor.

The other function of the input supply desk is to follow up the budget allocated for sheep and cattle fattening, dairy and apiculture inputs.

Chemical fertilizer

The major supplier of chemical fertilizer is the agricultural input supply corporation (AISCO). It Is a government organization whose main function is to procure and distribute fertilizer (DAP and Urea), pesticide and insecticide to farmers. In 2004/2005 cropping season 4217.5 Quintals of DAP and 2581.25 Quintals of UREA has been distributed to farmers, cooperatives, Merkeb Union on cash. Farmers located in the bottom land areas do not use fertilizer because of water logging problems.

Others
The other players in the supply of inputs are the multipurpose cooperatives, Ambasel and Merkeb Union cooperatives. Multipurpose cooperatives also provide cash on credit to purchase inputs like goats and oxen for fattening, poultry, bee hive, crossbred dairy. (see section 3.1 and annex 1.5)

3.3 Rural Finance

Amhara Credit and Saving Institution (ACSI)

ACSI is the major provider of credit and saving service for the rural population. It has 10 branches and 174 sub-branches in the Amhara region, one of which is in Fogera Woreda.
The following services are rendered by ACSI :
a. Group credit: 5 - 7 farmers can organize themselves and borrow money to purchase inputs like seed, oxen, fattening, dairy, fertilizer, bee hive, poultry etc. Poor farmers are given priority to get credit. Individual farmers will submit credit request through their respective peasant associations. The PA will screen farmers by taking certain parameters who are believed to be hard working, economically active (18-60 years of age), socially acceptable, motivated, ownership of one or no oxen which is an indication of poor wealth status.
Since its establishment in 1998 GC, the institute lent out a sum of Birr 8, 678,581 on credit to 5484 people to purchase seed, fertilizer, fattening, draft oxen, dairy cows, poultry etc. Out of these, 53 people were found defaulters and did not repay Birr 24,725.30. Farmers organized by the woreda Ministry of Agriculture (MOA) whose projects are believed to be in line with the established food security program will receive credit at 12.5 % interest. This

special program started in 2003/04 GC and 94 farmers have taken Birr 79,520 to purchase modern bee hives. Out of these, 2 are female. Those group of farmers whose projects are not related to food security will get credit at 18 % interest rate.

b. Asset loan: This loan is mainly given to government employees by consider their salaries as collateral and one person as a pledge. Loan is given by multiplying one third of the salary by 12 months. Interest is calculated using government rate. Maximum loan can't exceed birr 15,000 or USD 1744. Credit is given to purchase household furniture, house construction etc. In 2003, ACSI gave asset loan of birr 99, 700.00 or equivalent of USD 11,593.00 to 45 people including teachers, traders, ministry of agriculture staff etc.

c. Money transfer services: ACSI also administers retirement fund worth birr 100,000.00/month or equivalent of USD 11,627.00 received from government to 820 retired persons in the woreda. ACSI provide money transfer service to institutions like Amhara Credit and Saving Institution (ALMA) and Organization for Rehabilitation Development Agency (ORDA).

Others
Besides the microfinance institution, cash credit is provided by saving and credit cooperatives and multipurpose cooperatives to purchase inputs.

3.4 Agricultural extension service

The agricultural extension service in the Woreda is under the direct leadership of the Vice Head of the Agricultural and Rural Development. The Office directs 11 desks

1. Extension & Home Science Desk
2. Animal & Fisheries Resource Development & Protection Desk
3. Crop Production, Technology Promotion & Protection Desk
4. Natural Resources Development & Protection Desk
5. Environmental Protection, Land Utilization & Administration Desk
6. Cooperatives Promotion Desk
7. Water & Mining Desk
8. Rural Road Construction Desk
9. Rural Energy
10. DPPC & Food Security
11. Input supply and Credit

Extension and home science, animal and fisheries resources development and protection, crop production, technology promotion and protection desks deal directly with agricultural production. Natural resources development and protection and environmental protection, land utilization and administration deal with natural resources management. Cooperatives promotion, water and mining, rural roads and input supply are also under this office. The teams in animal and fisheries include livestock production, animal health, apiculture, livestock processing and marketing, and forage development.

Table 3- Number of staff and educational level of the Woreda Office of Agriculture

Department	Level of Education and Number of Staff							
	Primary	Secondary	Certificate	Diploma	BSc	MSc	DVM	Total
Administration	5	6	11	2		1		25
Plan and Info				3				3
Extension and Home Science.			22	33	1			56
Animal and Fisheries			17	6	1		1	25
Crop Prod.& Protection.				5	2			7
Natural Resources	5			4				9
Environ Protection			2	2		1		5
Cooperatives			1	5				6
Water and Mining			1	1	1			3
Rural Road			2					2
Rural Energy				1				1
DPPC				2				2
Input supply and credit				2				2
Total	10	6	56	66	5	2	1	146

Source: Fogera woreda office of agriculture, October, 2004

There are 5 experts under the extension system and are supported by about 60 development agents. Development agents (DAs) in the Woreda are involved in the distribution of inputs supplied to farmers on credit, and collection of down payments and credit repayments. Extension activities include teaching on timely ploughing, weeding, harvesting, maintain optimum seed rate, use of quality seed, etc. It is also important for the DA to teach farmers visit their field regularly and check if there is any pest attack, flood, water logging etc. Livestock extension teachings include planting improved feeds, preparation of compost, maintaining optimum number of livestock etc. Farmers are also advised to report disease outbreaks to veterinarians. In order to alleviate poverty, it is indicated in the 3 years strategic plan that each household member (working and non working) should be able to earn birr 10.00 per day or 3650 birr per year. Assessment of income will be conducted during 2004/05, in the month of May, 2005 (GC). This strategic plan started during 2004/05 cropping season.

There is one Technical Vocational Training Center (TVTC) in Fogera, Woreta town. In 2004, a total of 269 trainees have graduated and 21 of them will be assigned in 7 FTCs in Fogera Woreda. The rest 248 will be assigned in different woreda offices within the region.

3.5 HIV/AIDS service

The Fogera Woreda HIV/AIDS control and prevention office provides two kinds of services.

1. Voluntary Counseling Test (VCT)
2. Prevention of Mother to Child Transmission (PMTCT).

In an effort to reduce the spread of the disease, the woreda HIV/AIDS office has organized 5 commercial sex workers and establish beauty saloon. Community Voluntary Preli Mondo (CVM), an NGO based in ITALY has opened 6 zonal offices, one of which is in Debre Tabor zone and is helping orphans in handicraft training, brochure preparation etc. Government employees also contribute 2- 20 Birr per month in order to assist orphans. Focal points have been established in all government offices and are giving training on HIV/AIDS to their respective employees.
In 1996 EC,VCT was given to 514 people in the woreda and the following result was obtained.

Group of people who undertook VCT and number found positive

Group of people who did VCT	**Number of farmers tested for HIV/AIDS**	**Number of people found positive**	**% positive**
Farmers	113	18	15.9
Government employees	20	1	5.0
High School students	227	11	4.8
Soldiers	14	1	7.1
Unemployed	10	2	20.0
Commercial sex workers	9	2	22.2
Daily laborers	41	9	21.9
House wives	27	9	33.0
Traders	36	8	22.2
Drivers	2	0	0

Source: Fogera Woreda Office of HIV/AIDS

4- Priority commodity description, analysis and potential interventions

The following tables provide a brief description of production, input supply and marketing aspects of the priority commodities together with areas requiring attention and potential interventions as suggested by farmers and professionals during the woreda planning workshop. In addition, the possible institutions to be involved in executing these activities are also shown.

Table 4: Rice		
Production		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Weed is a major problem – needs three times (recommended) 8 birr/person for labor)	Weed (competition with other crops) Fallowing still practiced and is important along with rotation.	Research on weeds (identify the major weeds) ARARI; EARO
Germplasm – lack of, limited to one variety only Gomeara (IAC 164) released by Adet. But color is red – produces red enjera and is not accepted in HH and market and has not taken up. Production is OK.	Organized weeding system (Debo) – strengthen Problem of labour utilization (holidays, religion), visit towns on non market days;	Extension, ARARI, EARO, WARDA, IPMS Extension
No fertilizer use due to flooding and the soil is fertile alluvial soil – washed soil from highland areas	Farmers use hired labour under rice system No research on weed. No research on germplasm High malaria area and Trypanosomes impact on labour.	ARARI/EARO/IPMS
Broadcast, requires three to four times plowing	Undertake optimum cultivation practice	ARARI/EARO/IPMS
Seed system – farmer to farmer	Look for early maturing and better yielding variety	ARARI/EARO/IPMS
New NERICA variety which is 3 months variety is under study.	On-going	ARARI
Highland/midland community asking for non-paddy rice Planting methods	Supply and study additional germplasm including varieties for rain fed conditions	ARARI/EARO/IPMS
Diseases/pests – wave worm, shoot fly, rice hispid (weevil), rice blast (fungal?) Chemical control not recommended due to potential contamination of water for animals	Studies and solutions for diseases, pest and weed control Improved crop management systems Land and water management system Training, visits, exchange programs Explore existing technologies from experienced countries (production to marketing)	ARARI/EARO/IPMS
Lack of polishing technology	Examine possibilities for introduction of polisher through	ARARI, EARO, extension, IPMS

	cooperatives	
Current variety – shatters easily while in the field, high water produces more yield – high density seed in waterlogged areas.	Alternative varieties, crop management system	ARARI, Extension, IPMS
Flooding during seeding (before germination) creates high loss (doesn't grow), need to plow back an replant	Crop management systems	ARARI, extension
Input supply		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Land preparation – use oxen, plow 3-4 times,	Examine use of tractors for land preparation through cooperatives (plain, flat land, etc), but fragmented land); land holding HH (1.5 ha), 0.5 ha for rice/HH	Extension
Seed – no improved seed so far. Farmer based system	Consider alternative seed supply system including alternative varieties	ARARI, EARO, IPMS
No need for fertilizer at the moment, alternative fertilizers	Examine organic fertilizers	ARARI, IPMS
No crop protection chemical due to environmental effect	Assess possibility of integrated pest management options	ARARI, EARO, IPMS
Credit		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Non existent due to absence of package for rice and farmers use their own input supply system for seed. Package focuses on cultural practices, seeding rate (80-100 kg)	Examine development of credit facility for rice producers	Extension, IPMS
Marketing		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Price fluctuation – low prices during harvest (Nov-Jan)	Formation of marketing cooperatives	Extension, IPMS
Prices depending de hulling/ whole seed (de-hulled up to 300 Birr,	Examine feasibility of purchasing de-hulling and polishing equipment through formation and	Extension, IPMS

whole up to 100 Birr, now is about 170-180 Birr; loss due to de-hulling 30-35 kg loss), de hulling cost is 10 Birr/qt; husk – 3 Birr/qt and middling up to 15 Birr/qt. Lack of processing equipment	strengthening of marketing cooperatives	
Some cooperatives have started trading rice. SG-2000 working on post-harvest technologies to bring two mobile machines for threshing, de-hulling, grinding and polishing Seed breakage during de-hulling - There is one machine from Japan (UNDP supported) which is doing fine in de-hulling, plan to move rice polisher from Pawe to Fogera?	Strengthen cooperatives in marketing. Conduct market study, Financing cooperatives to handle purchase, storage, processing and marketing aspect.	Extension, IPMS

Table 5: Vegetables – pepper, Tomato, Onion		
Production		
Vegetables are grown using irrigation during the dry season. Shallow well, hand dug (4 –6 meter); river diversion, treadle pump (just started); water use groups (for pump; small water pumps; drip irrigation just started (two farmers)) are used to produce vegetables by smallholder farmers. On average, 0.06 – 0.75 ha/HH is allocated for vegetables. There is less focus on horticultural crops, even though there is a lot of interest to grow these crops from the farmers' side. The extension system needs to conduct workshops, training for farmers/experts, demonstration and seed multiplication plots. As these vegetables are high risk and input crops, lack of knowledge about these crops could lead to failure. They are highly perishable. The high price during fasting season may encourage farmers for better production. For example, in Fogera, pepper could yield about 8-10 qt/ha.		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Lack of knowledge	Training	Extension, ARARI, IPMS
High risk and high cost	Market information system, crop management contract farming	Extension, ARARI, IPMS
High price of seeds; OoA sells seeds, small amount sell depending demand	Develop farmer based seed production system	Extension, ARARI, IPMS

and available cash. Local, Adama red and Red Bombay onion varieties; garlic has great potential for market orientation; Seed price (supported by SIDA) – Adama Red – 410 /kg; Red Bombay – 205 Birr/kg; Red croyl – 345.75 Birr/kg		
Limited to onion only; lack of rotation	Examine market opportunities for diversification of produce	Extension, ARARI, IPMS
Shortage of land Shortage of water pumps	Maximize production per unit area Strengthen cooperatives to get credit and purchase water pump	Extension, ARARI, IPMS
Management problem – weeding, spacing,	Training	Extension, ARARI, IPMS
Problem of water usage - rotational use may affect yield;	Develop community based water management system	Extension, ARARI, IPMS
Hailstorm in some PA		
Diseases/pests (ballworm, bulb rot in onion, etc)	Examine integrated pest management system	Extension, ARARI, IPMS
Lack of indigenous knowledge in new crops – both in extension/farmers	Training	Extension, ARARI, IPMS
Input supply		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Shortage and high cost of seed, lack of diversity of seed supply	Improve supply, develop farmer based seed production system	Extension, ARARI, IPMS
Farmers not willing to use fertilizer – vegetative only, Need location specific study on soil fertility, Compost making just started	Undertake location specific soil fertility studies and develop recommendations	Extension, ARARI, EARO,IPMS
Agro-chemicals – expensive; unavailable, particularly fungicide; poor quality; low efficacy	Biological control? Strategic planting to minimize disease/pests; bait plants, alternative host plants	Extension, ARARI, IPMS
Shortage of water pumps – cooperatives provide credit for individuals and	Examine improvements in supply, Develop farmer based water supply and	Extension, ARARI, IPMS

groups this. (repayment over three years)	management system	
Farm tools – farmers have to purchase by themselves, no coop involved in this	Strengthen cooperatives	Extension, ARARI, IPMS
Inadequate knowledge in river diversion and irrigation system management	Provide training on water resources utilization and management	Extension, ARARI, IMWI, IPMS
Credit		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Cooperative supply limited credit for seed (onion) and pump	Strengthen cooperatives	Extension, IPMS
ACSI provides credit for seed, but high (18%) interest rate and on group collateral	Examine interest rate and effectiveness of group collateral	Extension, IPMS
SIDA supports provision of seed for free– but woreda sells at lower price,	Examine seed supply system	Extension, IPMS
Marketing		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Accessibility/road	Examine targeted areas for development of market access, examine alternative systems for access to markets	Extension, IPMS
Perish ability/short shelf life of produce	Develop effective market linkage, examine storage and processing systems, target production to be linked with market;	Extension, IPMS
Post-harvest problems – harvesting system, tomato harvested not at the right time; low prices – eg. 37,000 qt onion produced in 2004 but prices crushed; brokers benefit from low prices	Targeting markets, contract arrangements, training, marketing cooperatives	Extension, IPMS
No cooperative involved in marketing; those involved had storage problems	Strengthen marketing cooperatives	Extension, IPMS
No storage system; processing plant	Intermediate technologies	Extension, ARARI, IPMS

Lack of contract farming, no staggered production system	Develop market information system, organize contract farming	Extension, ARARI, IPMS

Table 6: Oil Crops (Noug) System		
Production		
Flax, rapeseed, safflower and noug are the main oil crops grown in the Woreda. Oil crops are produced both in the Fogera plains and in the highland areas under rain fed conditions. The major oil crop grown on an area of 5,886 ha in 2004 is noug and is one of the major cash crops for the farmers. In fact, Fogera is considered as one of the original locations for noug. Farms use local varieties that are inherently low yielder. Production is a low input system and farmers do not use fertilizers on noug.		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Weed (mainly parasitic weed)	Introduce weed control and management systems	Extension
Diseases and insects	Improve disease and pest control	Extension
Cultural practices (optimum harvesting time, etc.)	Change in cultural practices To market-oriented effective management system	Extension
Inherently low yielding local varieties	Introduce new varieties (eg. Shambu 1)	Extension, ARARI, IPMS
Input supply		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Seed – no improved seeds, seed supply system is farmer to farmer	Study seed supply system and design improved and effective methods	Extension, ARARI, IPMS
Farmers do not apply fertilizer	Examine nutrient requirements for the plant and develop site specific fertilizer (organic, inorganic) application system	Extension, ARARI, IPMS
Lack of improved varieties	Introduce improved varieties	Extension, ARARI, IPMS
Credit		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Lack of credit for oil crops	Examine consideration of oil crops in the credit institutions	Extension, BoARD, IPMS
Marketing		

Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Produce is marketed on individual basis to private traders	Strengthen cooperatives, introduce market information system, examine value adding to produce	Extension, IPMS
Price fluctuations	Strengthen cooperatives	Extension, IPMS
Poor capacity of cooperatives to purchase, store and process	Strengthen cooperatives	Extension, IPMS
Lack of contractual arrangement	Strengthen cooperatives	Extension, IPMS

Table 7: Pulses (Chickpea and lentils) Production		
Production		
Both chickpea and lentils are produced on residual moisture and as a relay cropping. It is a labour intensive production with traditional farming system using local varieties. In 2004, 2,776 ha and 880 ha of land has been put under chickpeas and lentils, respectively.		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Lack of improved varieties	Look for improved varieties for markets	Extension, EARO,ARARI, IPMS
Diseases (wilt root rot complex, rust), insect (cut worm and African boll worm, aphids) storage insect pests (weevils)	Introduce proper crop protection practices including minimization of post-harvest losses; examine disease and pest resistant varieties	Extension, EARO,ARARI, IPMS
Poor cultural practices	Training on improved crop management practices and follow-up	Extension
Poor storage facilities	Train and introduce improved storage system	Extension
Input supply		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Farmers do not use fertilizer	Study fertilizer requirements including bio-fertilizer	Extension, EARO, ARARI, IPMS
Lack of insecticides and fungicides (seed dressing)	Support and strengthen cooperatives to supply pesticides	Extension, EARO, ARARI, IPMS
Marketing		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***

Individual marketing, low and fluctuating prices	Strengthen cooperatives, link with markets, explore contract farming arrangements	Extension, EARO, ARARI, IPMS
Storage damage, poor quality	Improve storage system including treatment of stored products	Extension, EARO, ARARI, IPMS

Table 8: Cattle (Dairy and Beef) Production System		
Production		
The cattle population in the Woreda is estimated at 157,128, mainly local cattle. Dairy production is mainly based on local Zebu cows in rural areas and some crossbred (Fogera x Friesian) cows around urban areas. There is trypanosomes, high level of infestation with liver fluke and gastrointestinal parasites in the area. The predominant cattle breed is Fogera cattle and Semada cattle are found in higher altitude areas. Cattle production is based on extensive grazing system in the Fogera plains and cattle are kept in house between noon and 3 PM to minimize fly bite. Cattle are mainly kept for traction and milk production (mainly household consumption). Butter making and marketing is a common practice. There is no experience with systematic cattle fattening. Although the area has great potential, there is little experience in dairy and beef production		
Areas which need to be addressed	Potential Interventions	***Responsibility/task***
Poor genetic potential of local Fogera breed	Improve genetic potential breed through selection among the Fogera cattle through community based interventions	Extension, ARARI, IPMS
Inadequate knowledge on dairy and beef cattle management	Increase knowledge on management (production, housing, milk handling, processing)	ARARI, EARO/ILRI – provide knowledge and capacity building, Extension
Feed shortage and lack of knowledge on feed conservation and feeding systems	Introduce fodder technologies	Extension, ARARI, EARO, ILRI – provide germplasm and build capacity, IPMS
Trypanosomes, liver fluke, gastrointestinal parasites and other disease such as blackleg and anthrax.	Introduce effective vaccination and Trypanosomes and parasite control program	Extension, ARARI, ILRI, IPMS
No budget for animal health research ; surveillance, no policy in animal movement	Examine strengthening animal disease investigation, build capacity of staff, linkage with research, examine animal movement system and develop strategies	Extension, ARARI, ILRI, IPMS
There is one slaughterhouse in town; no meat inspection expert so far, and no	Examine means of establishing a slaughter house and install proper meat inspection system	Extension, ARARI, ILRI, IPMS, Woreda Administration

alternative arrangement so far – public health		
No urban agriculture office in Woreda – OoA provides health services	Examine plans on establishment of urban agriculture office under the Woreta town administration	Extension, ARARI, ILRI, IPMS, Woreda Administration
Input supply: Limited input supply		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Shortage of supply of animal genetic resources	Examine and establish mechanisms for sustainable animal genetic resources supply	Extension, ARARI, ILRI, IPMS
Shortage of feed supply	Establish cooperatives to supply concentrate feeds, supply of seeds and germplasm, develop community based seed/seedling production system	Extension, ARARI, ILRI, IPMS ICRAF
Shortage of drugs, poor quality contraband drugs, limited animal health services	Develop effective animal health services, train paravets, improve supply of drugs through cooperatives	Extension, ARARI, ILRI, IPMS
Lack of modern handling, processing equipment for dairy products (including butter churns)	Improve handling, processing, storage and transportation facilities through cooperatives Provide loans for supplying butter churns (for haricot/livestock system)	EARO/IILRI - provide TA Commercial banks to provide loans Cooperatives – to implement
Credit		
Limited credit facility for dairy and fattening schemes are available through cooperative desk		
Areas which need to be addressed	***Potential areas of intervention***	***Responsibility/task***
Limited involvement of credit institutions in financing dairy and fattening operations	Engage more finance institutions to provide credit for dairy and meat production	Extension, micro finance institutions, IPMS
Marketing: Marketing is done on individual basis in local rural markets		
Areas which need to be addressed	***Potential areas of intervention***	***Responsibility/task***
Limited market information resulting in low prices	Develop market information through the extension system and share with farmers	Extension, ARARI, IPMS
Limited linkages with traders	Develop market information through the extension system and share with farmers	Extension, ARARI, IPMS
Poor quality of produce	Training and market linkages	Extension, ARARI, IPMS

Table 9: Fish		
There are two fishing sites (Wagatera and Nabega PAs). About 33 HH participate in 2 groups (13 and 20 HHs) in the specialization fish program. Each paid 305 Birr to participate in package. They can get fishing gear and boats, but they have not received any resources up to now for over one year The money is available but nothing has happened. The system Is traditional, reed boat, do not have modern boats and fishing gear. Fasting season, they provide fish on back of a donkey to a trader in town. Fletto 4 Birr/kg, sells 8 Birr/Kg, normally (guts removed) collects at 2 Birr and sells at 4 Birr/kg. Fishing is seasonal and is only during the dry season due to lack of access and motor boat. There is an attempt to solve the problem through Regional Cooperatives Bureau due to the fact they want to organize farmers in the five Tanna bordering Woredas under one cooperative. Marketing is in local market. Aquaculture (Tilapia) attempted on one farm. Suitable with rice farming (like in southeast Asia, but appropriate species be need to be identified.		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Lack of modern fishing gear and boat	Provision of fishing gear, boat through credit system (cooperatives)	Extension, ARARI, BoARD, IPMS
A lot of wastage due to lack of cold chain system	Training and introduction of cold storage system	Extension, ARARI, BoARD, IPMS
Lack of slaughtering facility and storage facility	Construction of slaughtering facility and storage system (cooperatives)	Extension, ARARI, BoARD, IPMS
Lack of docking station (Kristos Samra to have one built by Ethiopian Shipping line	Construction of docking station through credit system (cooperatives)	Extension, ARARI, BoARD, IPMS
Input		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Motor boat, fishing net, ice and cold fish box	Provision fishing gear, boat through credit system (co operatives)	Extension, ARARI, BoARD, IPMS
Maintenance supply and system	Training	Extension, ARARI, BoARD
Credit		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
No credit for fishing provided from ACSI so far – ACSI credit limited to 5,000 Birr depending on benefit/cost ratio and social benefit 9equipment is too expensive)	Consider a special credit facility for fish resources development	Extension, ARARI, BoARD, IPMS
Lack of strong financing cooperative	Strengthen cooperative	Extension, ARARI, BoARD, IPMS
Marketing		

Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Seasonal, price fluctuations; no one buys during the wet season. Only one trader in town buys	Develop market information system, Linkage with markets, establish cooperatives, improve quality and storage system	Extension, ARARI, BoARD, IPMS
Catfish is very abundant, but not accepted locally; barbes (netch Asa) is abundantly available, and accepted	Train, develop market orientation system to other areas	Extension, ARARI, BoARD, IPMS
Lack of storage and transport facility	Strengthen cooperatives	Extension, ARARI, BoARD, IPMS
Lack of financing and cooperatives	Strengthen linkage with credit institutions and establish cooperatives	Extension, ARARI, BoARD, IPMS
Poor food habit of the community; lack of dependable shop in town; farmers have to sell it on an individual basis and house to house	Training and education	Extension, ARARI, BoARD, IPMS
Fish by products wasted; no processing plant; often dumped into Tana Lake	Training and development of utilization system	Extension, ARARI, BoARD, IPMS
No fish market studies so far		

Table 10: Apiculture

There is an expert in the woreda. DAs have been trained in apiculture management; production under highland condition, traditional system; number of beehive 18,980 traditional; 4 Zander (urban); 15 transitional (top bar); plus 5 new 1997; traditional yield 5-10 kg/year; During dry season, honey is sold at 12 Birr/kg; during harvest October/November 7-8 Birr/kg; Traders in town purchase honey and wax.. 3 traders send to Addis; Tej houses; Highland areas with forest cover have potential, but bee forage is problem and in short supply; chemical 2-4D becoming a problem on bees in the area; no alter system, no demonstration on modern honey production (transfer, harvesting, processing); no excluder, no honey extractor, no wax printing machine, there are 203 zander behives plus 7 queen excluder, one honey extractor , wire for only 50 hives sent, but price has not been fixed for distribution through cooperatives.

Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Traditional system(smoking, larvae thrown away and reduces yield; beehives made from reed)	Training	Extension, ARARI,SOS, IPMS
Wax long moth – problem,	Training, develop pest	Extension, ARARI,SOS, IPMS

ants, bird (nebe bella – green with yellow chest, peak); Aragabi – insect sucks the honey, bees can not attack it due to high wind creation, termite	and disease control system, introduce proper hygiene, position of beehive, remove old logs, train on dry season feeding system.	
Area often covered with grass and bush, not cleaned	Training on management	Extension, IPMS
Opening should be towards east, but farmers put it to the north (to avoid wind and rain) – extension of top cover solves the problem	Training on management	Extension, ARARI, IPMS
Harvesting is poor, contamination with handling facility, smoke contamination	Training	Extension, ARARI, IPMS
No regular bee colony market, but farmer to farmer (150 - 220 Birr/colony)	Examine introduction of queen rearing , colony splitting method	Extension, ARARI, IPMS
Input supply		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Beehives, farmer have started producing top bar after training (about 300 farmers have gotten training and are participating); Zander supply is under preparation, wax casting mold is in short supply, wire	Increase supply of improved beehives, train farmers to produce own Kenya top bar type using locally available materials, train local wood workers in producing bee hives	Extension, ARARI, IPMS
Harvesting gear – farmers have been trained to prepare	Improve supply of honey harvesting equipments	Extension, ARARI, IPMS
Processes – only one honey extractor just arrived – one extractor for 177 HH	Examine the rational supply of equipments	Extension, ARARI, IPMS
Shortage in the supply of queen excluder, wire (only 7 queen excluder, wire for 50 hives only), smokers, gloves, brush etc	Improve supply of equipments	Extension, ARARI, IPMS
Credit		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
CBE through cooperatives, support upto 15 traditional beehives (2092.50 Birr), not dependable system, not timely (12.5% interest),	Examine increased access to credit, interest rate, repayment system	Extension, IPMS

ACSI just started this year, up to 5,000 Birr, 80 farmers have benefited (18.% interest rate); 15 from food security office through ACSI (12.5% interest rate).	Examine increased access to credit, interest rate, repayment system	Extension, SOS, IPMS
Marketing		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
No marketing cooperative, sell individually to traders in town	Establish and strengthen cooperatives	Extension, SOS, IPMS
Lack of processing and storage system; inefficient use of wax.	Examine value adding to cooperatives	Extension, SOS, IPMS
SOS operates in Mekit Woreda only, do not purchase from Fogera Woreda	Establish linkages with marketing system, SOS	Extension, SOS, IPMS
No quality control, grading handling system	Train and introduce quality control and grading system	Extension, SOS, IPMS
No training on handling and processing	Training	Extension, SOS, IPMS
Wax is about 50 Birr/kg, but farmers do not benefit from it as they sale honey with the wax	Examine holistic approach to apiculture development	Extension, SOS, IPMS

Table 3: Poultry		
The woreda has distributed 5730 improved day old chicks as part of the three years development plan of the woreda. These chicks were obtained from Andassa farm. The package include 50 day old chick/person, 2.5 kg of feed/chicken/2 months and costs birr 100.00. Hay box (30 cm height X 57 cm width X 57 cm length) and chick run (30 cm height X 127 cm width X 127 cm length) which amounts to birr 110.00 and birr 120.00 respectively was distributed free of charge by the woreda bureau of agriculture. 20 farmers had been trained in vaccination for one month and charge 5 cent/chick. Chicks need at least three rounds of vaccination. Good season for poultry production are November, December, January, and February. Farmers need to acquire knowledge in improved feed preparation after two months.		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Shortage of improved breed (variety as well as quantity.	• Project Coordinate supply of improved breed from Debre Zeit/Fitch	Bureau of agriculture/IPMS

Lack of amprolium, antibiotics drugs to treat sick chicken	• Project Coordinate supply of these medicines	Bureau of agriculture/IPMS
Feed resources – lack of availability	• Help establish cooperatives and coordinate the supply of poultry feed.	Cooperatives desk /MoARD/ IPMS
Developing a culture of innovation and hard work	• Train and organize innovative farmers first to set examples to others	MoARD/IPMS

Poultry Input Supply

Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Single breed offered in current package	• Provisions for better breeds both in quantity and quality • Community based breeding of improved breeding services • Assess why breeding centers in Fiche and Ambo are not used to supply input needs in Fogera	MoARD/IPMS DZ Research/ MoARD MoARD/IPMS
Poultry operations managements	• Project can provide training and provision of "package" type materials for lifecycle management. • Diversification in poultry operation such as meat as well as egg production	MoARD/IPMS MoARD/IPMS
High price for improved breeds (Birr 100.00) per package	• Provisions of credit services through cooperatives	Micro finance/Coops
Lack of medicine to treat chicken	Coordinate supply of medicine against cockcidosis	MoARD/IPMS
Lack of hay box and chicken run	Provide revolving credit fund through cooperatives	IPMS/MoARD
Knowledge in improved feed preparation	Train farmers how to prepare improved feed	MoARD/IPMS

Poultry market

Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Lack of ready and nearby markets	Linking farmers' with a marketing network – both for egg and meat products	IPMS/ MoARD

Low price for chicken during rainy season because of high prevalence of disease	• Increase supply of drugs and reduce death rate and fetch a good price during the dry season	Extension desk/IPMS

Table 12: Extension system		
Areas which need to be addressed	***Potential interventions***	***Responsibilities/tasks***
Centrally planned packages (fertilizer application on Fogera plains mountains, horticultural crops, etc), lack of flexibility, and participatory planning	Examine flexible, community based planning and intervention strategies	Extension, ARARI, BoARD, IPMS
No new knowledge to extensions	Training, improve access to knowledge	Extension, ARARI, BoARD, IPMS
Input supply oriented system	Re-orient to a knowledge house	Extension, ARARI, BoARD, IPMS
Multi-purpose use of extension agents, experts	Re-orient to a knowledge house	Extension, ARARI, BoARD, IPMS
Too much paper work; too much planning	Simplify paper work	Extension, BoARD, IPMS
No follow-up of agreed operations. Eg water harvesting; when attention is diverted, focus disappears	Examine flexible, community based planning and intervention strategies	Extension, ARARI, BoARD, IPMS
Lack of settled thinking and long term operational goal; activity rather than output focus	Re-orient to a knowledge house	Extension, ARARI, BoARD, IPMS
Lack of training and upgrading of skills for extension staff and farmers	Provide training	Extension, ARARI, BoARD, IPMS
Lack of assessment and evaluation of system	Lack of assessment and evaluation of system	Extension, ARARI, BoARD, IPMS
Quantity focused than quality approach – Balance between achievable targets.	Focus the system to output orientation	Extension, BoARD, IPMS
Overlap of responsibility	Define clear roles and	Extension, BoARD,

	responsibilities	IPMS
Lack of modern equipment and facilities for all staff	Assess needs	IPMS

5. Outline of program of work Fogera PLS

5.1 Priority commodities and natural resource management technologies

During the project's first year, attention will be focused on innovative technology practices and institutional innovations for the following priority commodities and their supporting NRM technologies.

System 1 - Rice/Fish/Livestock farming system

Crops: Rice/ irrigated vegetables (Onion, Pepper, Tomato), Noug, Chick pea
Livestock:: Fish, Butter, Beef, Hide
NRM technologies: Trypanosomes and malaria control, soil and water management, shallow well, pump, river diversion irrigation systems, flooding

There is no bamboo in Fogera woreda. However, there is bamboo in some of the neighboring woredas like Awi, Farta, Lay Gaint etc. Carpenters from these woredas take bamboo to Fogera and other woredas and make household furniture like chair, floor carpet etc.
Eucalyptus is growing widely and is one of the source of cash income and construction. A market study need to be undertaken before embarking on any commercialization strategy.

System 2. Cereal/Livestock farming system

Crops: Noug, irrigated vegetables (Pepper, Tomato, Onion)
Livestock: and livestock products: Apiculture, Butter, Poultry, Beef
NRM technologies: trypanosomes and malaria control, soil and water management, shallow well, pump, river diversion irrigation systems.

Based on the knowledge captured and the lessons learned during the initial implementation of the innovation program some of the priorities commodities may be dropped, while others may be added.

5.2 PLS knowledge management – general (RBM code 100 series)

To improve the capturing and sharing of knowledge on priority commodities and the supporting NRM technologies in the PLS, the state of knowledge and knowledge requirements will have to be assessed on a continuous base during the project life. (The initial PRA and the subsequent assessments will form an integral part of this process).

The knowledge will be synthesized and assembled at the federal level in a Resource Information Centre using electronic data base formats.

To share this knowledge with institutions and communities, various processes and mechanisms will be used including the distribution of appropriate printed materials (manuals, training materials, posters, and leaflets in the local language), radio programs, local exhibitions etc.

To link the PLS institutions with the Resource Information Centre, electronic linkages with the Woreda Agricultural Desk will be established. This effort will have to be integrated and

synchronized with other activities in this field i.e. Woreda Net, School Net and Agri Net (Fogera was one of the test woredas for this project and received computers and staff training, however the system is not operational now) . Simultaneously innovative ways of creating a culture of knowledge capturing and horizontal knowledge sharing between the actors in the PLS and between the actors at PLS and the regional and federal level will have to be developed. – see section 5.3 on capacity building.

Table 13. Project support for PLS knowledge management system (first year)

Activities	Target	Responsible
(100) Continuous assessment of current state of knowledge requirements based on field work (see 5.4) and meetings	Woreda institutions	Woreda institutions involved in extension, input supply, micro finance, cooperatives, marketing under the supervision of project staff
(100) Collection and synthesis of data for PLS (GIS) database	Woreda	Project staff with Woreda Agricultural office
(100) Preparation of extension materials and methods and training materials *	Woreda institutions and farmers	Research and development partners with the help of project funding.
(100) Purchase and installation of computers and hard ware	Woreda Agricultural office	Project staff
(100) Training of staff in electronic knowledge management	Staff member agricultural office.	Project staff

* For details see commodity program described in section 5.4. – indicated with code 100

5.2.1 School and Woreda Net

a. School net

There is one high school in the woreda and School net has already started. The program is a one way (only listening including picture) transmission using 12 plasma TVs. Two staff members have been trained for 35 days in Bahar Dar with the assistance from UNDP and government in computer (Microsoft Word, Microsoft Excel, etc), operation of the plasma TV, video conference arrangement etc. Desalegne Alem has also been trained for 5 days in Bahar Dar on how to operated the plasma TV. There are 8 channels and 8 subjects are transmitted.

According to the technician, major problem encountered is that teachers do not have lesson plan and found it difficult to prepare note for a particular subject. Broadcasting is not adjusted

according to the program. For example, Chemistry is broadcasted instead of Biology in that specific period of time.

b. Woreda Net

Two people have been trained from the Woreda Ministry of Capacity Building for a period of 35 days in Bahar Dar. In this system, two way communication with picture and sound will be transmitted where participants will receive and send messages. The apparatus has been installed successfully, but operation has not started yet until the date of this report.

5.3 PLS public institutional capacity building (RBM code 200 series)

To introduce the project, and to train public institutional staff in innovative technology transfer methods, inter-institutional collaboration and cross cutting themes like gender and environmental assessment, various trainings will be conducted for Woreda staff. (Materials for such training will be prepared by the project with the help of consultants and contributions from the project partners). To stimulate the integration with private institution staff, some of the staff of the private institutions will also be involved in this training. The training will be continuous during the project life and the effectiveness of the training will be assessed regularly. Lessons learned will become an integral part of follow up training events.

Table 4 Potential Woreda staff to be included in the innovative methods training

Agricultural desk	
Crop production	12
NRM	5
Livestock	9
Cooperatives	4
Input supply	3
Micro finance institutions	1
Women affairs office	1
HIV/AIDS office	1

The FTC staff (involved in the program) will be trained by Woreda extension specialist, and some other specialists (gender, natural resource management) and they will in turn use these concepts during their daily work with the farmers and communities (see section 5.4).

Use of these innovative methods by FTC staff will be monitored and evaluated by the project staff and form the basis for adjustment in future trainings (see before).

Besides the building of the capacity of the Woreda and FTC staff in the use of innovative methods and institutional arrangements, technical training on the priority commodities, including new production methods/techniques, farmer/group/cooperative based input supply and marketing systems will be provided (Materials for such training will be prepared by the project with the help of consultants and contributions from the project partners). Details for

such training are included in the PLS sustainable livelihood development activities described in section 5.4.

An integral of the capacity building activities at the Woreda level is the development of the FTCs. In the initial phase the project will support these FTCs with printed materials (see knowledge management) and demonstration materials in support of the priority commodities and supporting NRM technologies (see section 5.4 for details).

While many capacity building activities have been undertaken for public staff by numerous projects operating in Ethiopia, the actual use of the increased capacity by the staff in their daily work is often minimal because of a host of other bottlenecks and a lack of reward for those staff which have made progress despite the presence of these bottlenecks.

The project will introduce various other capacity building initiatives at the PLS level to alleviate some bottlenecks in order to facilitate the introduction of technologies and institutional innovations. This will include the supply of credit funds and financial and technical support for market studies and linkages for priority commodities and operational cost of experts to supervise and guide the DA staff at FTC level. These activities are integrated in the PLS sustainable livelihood activities (see section 5.4).

The project will furthermore set aside some funds for rewarding experts and FTc staff which have been made good progress in technology and institutional innovations. One potential reward may be in the form of visits to places of interest (this will be introduced in the second project year).

Finally, an integral part of the PLS capacity building support is to create a learning system between the region and the PLS and to create an inter-institutional learning system at the Woreda and FTC level. To facilitate this arrangements the project has established Regional and Woreda level Advisory and Learning Committees (RALCs and WALCs). A budget will be made available to use/develop various learning mechanisms including field visits and small workshops. An integral part of this learning will be the sharing of knowledge between the regions and institutions concerned.

Table 15. Project support for PLS general* capacity building support (first year)

Activities	Target	Responsible
(200) Training and follow up in innovative methods	Woreda staff and FTC staff	Project staff and consultants
(200) Training and follow up in gender	Woreda and FTC staff	Project staff and consultants
(200) Training and follow up in environmental assessment	Woreda NRM staff and FTC staff	Project staff and consultants
(200) Development of a reward system for institutional staff	Experts and FTC staff	Project staff and WALC and RALC
(200) RALC and WALC learning activities including field visits and workshops	RALC and WALC	Project staff

* Commodity and or technology specific support to Woreda staff institutions and FTCs is described in section 5.4.- indicated with code 200.

5.4 PLS sustainable livelihood development (RBM code series 300)

The project will concentrate its efforts on introducing innovative technology (practices) and institutional innovations with farmers and communities near Farmer Training Centers (FTC) which have a potential for the identified priority commodities and supporting NRM technologies (see Tables 15 a, b, c)

Table 15a. FTCs with potential for priority commodities and NRM technologies in the Rice/Fish/Livestock system

FTC	Rice/ NRM	Fish/ NRM *	Horticul-ture	Butter	Noug	Chick pea	Beef	Hide
Woreta Zuria	X		X	X	X	X	X	X
Kuhar Michael	X		X	X	X	X	X	X
Kuhar Abo	X		X	X	X	X	X	X
Awana Tihua	X		X	X	X	X	X	X
Dibana Sifatira	X		X		X	X	X	X

* **= No FTC established. Nabega and Wagatera are the PAs where the fish is produced.**

Table 15b. FTCs with potential for priority commodities in Cereal/ Livestock system

FTC	Apiculture	Horticulture	Noug	Butter	Poultry	Beef
Meneguzer	X	X	X	X	X	X
Bebeks	X	X	X	X	X	X
Addis Betekeristian	X	X	X	X	X	X
Zeng	X	X	X	X	X	X
Woji	X	X	X	X	X	X
Alem ber	X	X	X	X	X	X

Table 15c. FTCs with potential for NRM technologies in both farming system

FTC	Trypano somes	Irrigation	Soil and water management	Malaria	Flooding	Soil erosion
Woreta Zuria	X	X	X	X	X	
Kuhar Michael	X	X	X	X	X	
Kuhar Abo	X	X	X	X	X	
Awana Tihua	X	X	X	X	X	

Dibana Sifatira	X	X	X	X	X	
Meneguzer	X	X	X	X		X
Bebeks	X	X	X	X		X
Addis Betekeristian	X	X	X	X		X
Zeng	X	X	X	X		X
Woji	X	X	X	X		X
Alem ber	X	X	X	X		X

An initial set of potential interventions were determined during the Woreda planning workshop (see chapter 4) and an initial set of activities was designed with regional and woreda representatives and partner institutions in the national planning workshop. At the start of the implementation of the project communities will be consulted about the identified priority commodities by FTC as well as the proposed activities.

The following sections deal with activities on the priority commodities which are envisaged to be accomplished within the first year of the project ‘s life.

5.4.1 Fish (Rice/Fish/Livestock System)

Marketing
There is already established dried fish market in the Sudan. Value added options and market study need to be carried out. There are 33 households who are involved in marketing of fish. These households are located in two PAs (Nabega and Wagatera). Efforts are under way by Fogera cooperative desk to organize these farmers to form a cooperative. Once they form their own organization, they will be linked to appropriate credit institutions to acquire the necessary fishing equipments like fishing gear and boats. So far, there are no FTCs established in the area.

Table 16. Project Support in fish marketing

Activities	Target	Responsibility
(400) Conduct fish marketing study (volume, type of product, price, infrastructure, urban and cross-border market)	2 peasant associations (Wagetera and Nabega)	World Fish Center, ARARI/EARO Sebeta/project staff
(200) TOT on post harvest practices, role of fish on household livelihoods and regional economy, consumption habits and nutritional benefits	2 fish experts, 2 supervisors (include women experts or supervisor), 2 development agents	World Fish Center, ARARI/EARO Sebeta/project staff
(300) Training farmers on pre and post harvest practices, role of fish on household livelihoods and regional economy, consumption habits and nutritional benefits with the	2 peasant associations (Wagetera and Nabega) (include women)	FTC staff guided by woreda/project staff

objective of creating local market for fish		
(300) Follow up of the 33 households and help them get credit fund to purchase the necessary equipments.	2 peasant associations (Wagetera and Nabega)	Micro finance/ cooperative desk with project staff
(300) Link fish marketing with potential buyers	2 peasant associations (Wagetera and Nabega)	Cooperative desk/Project staff

Input Supply/credit

In line with the regional breeding strategy, the supply of different fish species will be introduced. Equipments like fishing gear, boats, slaughtering house, handling and processing, storage facilities will be improved. Project will make the necessary efforts to encourage consumption habit of fish with the objective of enhancing nutritional status of households.

Table 17. Project support for fish input supply and improvement

Activities	**Target**	**Responsibility**
(300) Facilitate supply of fish equipments (fishing gear, fishing net)	2 peasant associations (Wagetera and Nabega)	World fish center/ARARI/EARO Sebeta and project staff
(200) Manuals on lake fisheries utilization and management, fishing gear technology, post harvest technology.	2 peasant associations (Wagetera and Nabega)	World fish center/ARARI/EARO Sebeta and project staff
(300) Organize fish day and radio programs as promotional events	25 peasant associations	Office of agriculture and rural development/project staff
(300) Organize radio programs to promote fish consumption	Both farming systems	Office of agriculture and rural development/project staff

Production

The most serious production and NRM problem to be addressed is the practice of indiscriminate and destructive fish harvesting. Farmers grind seeds of *Millitia ferruginea* plant and put in to the lake. This toxic plant kills small fish and makes big fish unconscious float on top of the water and easily harvest. The negative impacts of degradation of catchments due to irrigation activities, destruction of wetland on fisheries resources and breeding areas should be focused.

Table 18. Project support for fish production improvement

Activities	Target	Responsibility
(200) TOT on impact of watershed management on fisheries production and overall environment	2 environment experts. 2 supervisors. 1 alternative energy expert. 2 development agents in two peasant associations.	World fish center/ARARI/Theme 5 (sustaining water and nutrient productivity)/ EARO Sebeta and project staff
(400) Study on stock and biodiversity assessment and design alternative production systems	2 peasant associations in the fish producing areas	World fish center/ARARI/EARO Sebeta and project staff
(200) TOT on impact of destructive practices of harvesting and breeding stock	2 environment experts 1 alternative energy expert 2 supervisor (include women expert or supervisor), development agents in two peasant associations	World fish center/ARARI and project staff
(300) Training farmers on impact of destructive practices of harvesting and breeding stock, impact of water shed management	Farmers in 2 peasant associations (include women)	FTC staff guided by woreda/project staff
(200) TOT on pre and post harvest practices	2 fish experts 2 supervisors (include women expert or supervisor) 2 development agents	World Fish Center, ARARI/EARO Sebeta/project staff

5.4.2 Apiculture (Cereal/livestock system)

Marketing

There is great potential for honey marketing. Farmers need to be linked with potential buyers from Addis or big towns like Bahr Dar and international market for better price. Indigenous knowledge on apiculture production will also be explored. To facilitate credit and increase house hold income, formation of cooperatives will be given paramount importance.

Table 19. Project support for honey/wax marketing

Activities	Target	Responsibility
(400) Conduct honey marketing study (volume, price, packaging etc) including market linkages with national and international market	Farmers in or near 6 FTCs and DA posts	Cooperative promotion bureau/Bureau of trade and industry/ Bureau of agriculture/project staff/Holeta bee center/ SOS Sahel
(200) TOT on quality control, grading, processing and handling of honey and wax; and role of honey on household livelihoods and regional economy	5 supervisors, 1 expert (include women expert or supervisor) and staff from 6 FTCs	SOS Sahel / project staff/ARARI/ Holeta bee center
(300) Training of farmers on quality control, grading, processing and handling of honey and wax; and role of honey on household livelihoods and regional economy	Farmers near 6 FTCs (include women) and DA posts	FTC staff guided by woreda/project staff/SOS Sahel
(300) Help establish cooperatives to be able to get access to credit.	Farmers near 6 FTCs and DA posts	ACSI/cooperative desk/project staff

Input Supply

There is a need to increase the supply of improved and indigenous bee forages. An innovative farmer based system of modern bee hive equipments need to be developed. Project will make the necessary efforts to train and follow up farmers and experts in making and repairing improved bee hives and other necessary equipments

Table 20. Project support for honey/wax input supply system

Activities	Target	Responsibility
(200) Supply demonstration materials like different bee forages, improved bee hives, manuals on honey and wax utilization, processors, extractors, casting, mould, uncapping fork, protective, audiovisual materials.	6 FTCs,	SOS Sahel /Woreda bureau of agriculture/IPMS project/Holeta bee center
(300) Organize honey day and radio programs as promotional events	25 peasant associations	SOS Sahel /Woreda bureau of agriculture/IPMS project/Holeta bee center

Production and natural resource management

Modern apiculture system like the use of Zander type (4) and Kenya top bar (15) beehives has just started. This need to be strengthened and expanded to other areas. Honey yield need to be increased from 5-10 kg/year/hive of the traditional system to at least about 30-50 kg/year/hive in the coming one year.

Table 21. Project support for honey/wax production improvement

Activities	Target	Responsibility
(200) TOT on improved method of production and processing, including position of bee hives, colony splitting, extraction, control of pest, hygiene, honey and wax management	5 supervisors, 1 expert,(include women expert or supervisor), 6 FTC staff	SOS Sahel/project staff/ARARI/Holeta bee center
(300) Training farmers on improved method of production, processing, position of bee hives, colony splitting, extraction, bee colony management, hygiene, honey and wax management etc.	Farmers near 6 FTCs (include women)	FTC staff guided by woreda/project staff/SOS Sahel
(400) Conduct study on effects of different bee forages on the quality and quantity of honey	Farmers near 6 FTCs (include women)	SOS Sahel/project staff/ARARI/Holeta bee center
(300) Use knowledge of innovative farmers for increased production	Farmers in and around 6 FTCs	SOS Sahel/project staff/ARARI/Holeta bee center

5.4.3 Dairy and beef (Both systems)

Marketing

According to the woreda bureau of agriculture and farmers, there is no problem of market demand for dairy products. However, supply of these products need to be studies in more detail. In some cultures, especially in muslims community, dairy product is consumed at home and is rarely marketed. Further study need to be conducted in this aspect as it has a direct implications on marketing.

Table 22. Project Support for improving dairy products and beef marketing

Activities	Target	Responsibility
(400) Conduct dairy and beef marketing study (potential, volume, price, packaging, quality standards, cooling etc) and recommend potential areas for intervention	Farmers near 11 FTCs	Bureau of agriculture/project staff/Andasa/ILRI Debre Zeit
(200) TOT on the advantages of formation of dairy and beef	11 FTC staff , 4 supervisors, 2	Regional cooperative bureau/project staff

cooperatives, marketing, post harvest practices etc.	experts, cooperative desk (include women expert or supervisor)	
(300) Training of farmers in the importance (concept, advantages over individual, credit access, increased income etc) of establishing dairy and beef cooperatives, post harvest practices.	Farmers near 11 FTCs (include women)	FTC staff guided by woreda/project staff
(300) Establish link with potential buyers and traders of dairy product and beef	Farmers near 11FTCs	Bureau of agriculture/project staff
(300) Establish link with veterinary clinics and drugs	Farmers near 11FTCs	Private traders/bureau of agriculture/IPMS project

Input Supply

The project will try to avail the improved ILRI churner to start with and develop skills on locally making this churner and others. Demand for this churner and others need to be studied. Identified forges like Napier grass need to be expanded in large scale.

Table 23. Project Support for dairy products and beef input supply system

Activities	Target	Responsibility
(200) Supply of demonstration materials like improved milk churner and equipments, different animal feed types both for dairy and beef, leaflets on dairy and beef production, handling and processing	500 pamphlets and 100 posters in 11 FTCs	ILRI Debre Zeit/Project staff /bureau of agriculture
(300) Organize milk day as promotional events and radio programs	25 peasant	Bureau of agriculture/IPMS project
(200) TOT on the role of livestock and dairy products production and management, hygiene, processing and household income.	11 FTC staff , 4 supervisors, 2 experts (include women expert or supervisor if possible)	ILRI staff from Debre Zeit Research Station/ARARI/project staff/Andasa Research Center
(300) Training farmers on the role of beef and dairy production and management, hygiene, processing and household income.	Farmers around 11 FTCs (mainly on dairy, focus on women)	FTC staff guided by woreda/ ILRI staff from Debre Zeit research/project staff

Production and natural resource management

The main problem in relation to dairy and beef production is shortage of fodder and trypanosome. Efforts will be made to help avail different forage species and eradicate trypanosomes in collaboration with relevant organizations. The Fogera breed which is one of the best indigenous dairy and beef animal is disappearing as a result genetic dilution with other small framed and genetically poor breeds like the Simada. In the coming one year, the

project will focus on innovative methods of maintaining this important breed by introducing knowledge to farmers and FTCs. In addition, there is a need to increase the knowledge in the use of zero grazing system, improved pasture management etc.

Table 24. Project support for dairy products and beef production improvement

Activities	Target	Responsibility
(400) Study existing dairy and beef production and management system	Farmers near 11 FTCs	ARARI/project staff
(200) TOT in livestock disease transmission to humans, clinical sign of animal disease, withdrawal period after spraying or application of drugs, trypanosomes control system, improved techniques of dairy and beef production and management	4 supervisors, 2 experts, 11 FTC staff.	ARARI/project staff/ ILRI theme 4/Debre Zeit Veterinary college/Andassa/ ILRI Debre Zeit Station
(300) Training farmers in improved techniques of dairy and beef production, livestock disease, clinical sign, withdrawal period after spraying, application of drugs, trypanosomes control system	Farmers near 6 FTCs and DA posts(include women)	FTC staff guided by woreda/project staff

5.4.4 Poultry (Cereal/livestock system)

Marketing
Poultry is marketed within the nearby villages, woreda and regional town in Bahar Dar. There is no problem of market demand for the products. However, supply and demand for chicken, eggs and its by products need to be studied in more detail for large scale marketing.

Table 25. Project Support for poultry marketing

Activities	Target	Responsibility
(400) Conduct poultry marketing study from production to consumption and marketing.	Farmers near 6 FTCs and DA posts	Andassa livestock farm/Cooperative desk /project staff
(300) Link producers with a marketing chain possibly with traders and big hotels in big towns	Farmers near 6 FTCs and DA posts	Cooperative desk/Bureau of agriculture/project staff
(300) Encourage farmers to establish cooperatives to get access to credit and expand poultry business	Farmers near 6 FTCs and DA posts	Cooperative desk/Bureau of agriculture/project staff
(200) TOT in getting basic knowledge in marketing and advantages of group formation	5 supervisors, 2 experts, (include women expert or supervisor), staff from 6 FTCs	Cooperative desk/Bureau of agriculture/project staff

(300) Training farmers in getting basic knowledge in marketing and advantages of group formation	Farmers near 6 FTCs (include women), DA posts	FTC staff guided by woreda/project staff

Input Supply

One of the important tasks is to work closely with potential poultry breeding centers in collaboration with the input supply desk and facilitate distribution of day old chicks, cocks, hay boxes, chick run and other equipments in sufficient quantity. Cooperatives need to be strengthened by facilitating credit scheme to purchase the required amount of chicks, cocks, construction and other materials.

Table 26. Project Support for poultry input supply system

Activities	**Target**	**Responsibility**
(100/200) Supply demonstration materials like hay box, feeding, watering trough, small improved incubator, battery cage, egg tray, pamphlets, posters, training manuals	300 copies of each manuals at 6 FTCs	Bureau of agriculture/IPMS project/ Debre Zeit Research center, EARO/ Andasa
(300) Organize poultry day and radio program as promotional events	Farmers near 6 FTCs and DA posts	Bureau of agriculture/IPMS project/ Debre Zeit Research center, EARO/ Andasa
(200) TOT in general poultry production and management	5 supervisors, 2 experts (include women expert or supervisor if possible), staff from 6 FTCs	Bureau of agriculture/IPMS project/ Debre Zeit Research center, EARO/ Andasa
(300) Training farmers in general poultry production and management	Farmers near 6 FTCs (include women)	FTC staff guided by woreda/project staff

Production and natural resource management

Poultry production is not considered as a major farm or household activity by many farmers. Hence, its management is often neglected (scavenge around homestead, no follow up of vaccine, housing etc). In the coming one year, the project will focus on innovative system of production and improve knowledge on the management practices. The project will also focus in training and involve women from production to consumption and to marketing.

Table 27. Project support to improve poultry production

Activities	Target	Responsibility
(400) Study existing production system, role of poultry on household livelihood and management with the objective of possible improvements	Farmers near 6 FTCs and DA posts	Andassa/ARARI/project staff/ Debre Zeit Research Center, EARO
(200) TOT on improved poultry production and management (housing, feeding, watering) and disease control	5 supervisors, 2 experts, 6 FTC staff (include women expert or supervisor if possible)	Andassa/ARARI/project staff/ Debre Zeit Research Center, EARO
(300) Training farmers on improved poultry production and management (housing, feeding, watering) and disease control	Farmers near 6 FTCs (include women if possible), DA posts	FTC staff guided by woreda/ project staff

5.4.5 Hide (Rice/Fish/Livestock System)

Marketing

Raw hide is marketed within the nearby woreda by individual farmers. Local tanners are the major buyers of hide from farmers. There is no problem of market demand within the domestic market. The woreda is well known for its local tanners. There are more than 20 individuals in Woreta who buy the hide directly from farmers and produce items like stool, traditional food basket, rope, household furniture etc. from hide and sell in local markets and big towns like Bahar dar. Cost benefit analysis of local carpentry versus sale of raw material to modern tanneries is very important for further development of the commodity. Establishing cooperatives, involving them in buying and linking them to potential tanners will increase their bargaining power and increase income to farmers.

Table 28. Project Support in hide marketing

Activities	Target	Responsibility
(400) Conduct hide supply and marketing channel for future intervention .	20 handicrafts and farmers near 6 FTCs	NAHRC (national animal health research center)/Bureau of agriculture /project staff
(300) Encourage local tanners, and farmers to establish cooperatives to get access to credit and construct store, purchase equipments and expand hide business	20 handicrafts and farmers near 6 FTCs	Bureau of agriculture /project staff
(200) Training in group formation, handling, semi processing and manufacturing household items, cloths etc.	6 FTC staff, 2 supervisors, 2 cooperative and input supply experts (include women if possible)	NAHRC (national animal health research center)/ Bureau of agriculture /project staff/ Regional Cooperative Bureau
(300) Training of farmers in group formation to facilitate transaction and get more income	Farmers near 6 FTCs (include women if possible)	FTC staff guided by woreda/project staff

Input Supply

Project will focus in disseminating knowledge through training and innovative system on animal health and proper application of drugs with the help of veterinarians.

Table 29. Project Support in hide input supply system

Activities	Target	Responsibility
(200) Supply demonstration of slaughtering, ripping, flying knife, tanned hide, drying frame, pamphlets, posters	6 FTCs and DA posts	NAHRC (national animal health research center)/bureau of agriculture/project staff
(300) Organize hide day as a promotional events	Farmers near 6 FTCs and DA posts	Bureau of agriculture/ NAHRC / IPMS project
(200) TOT in treating animals pre, peri and post slaughter, curing and preserving hides; and impact of feeding on quality of hide.	6 FTC staff, 2 supervisors, 2 experts (include women if possible)	NAHRC (national animal health research center)/bureau of agriculture/project staff
(300) Training of farmers and follow up in FTCs in treating animals, pre, peri and post slaughter; curing and preserving hides; and impact of feeding on quality of hide.	Farmers around 6 FTCs (include women if possible) and DA posts	FTC staff guided by woreda/project staff

Production

Knowledge in hide processing need to be emphasized in the coming one year. In spite of several attempts in the improvement of the production of hide, most farmers are still practicing traditional diagnosis of sick animals and spoil the quality of skin using knives, whip lash, brand with hot metals etc. Innovative method of treating sick animals for the sake of protecting the hide will be given more attention.

Table 30. Project support in hide production improvement system

Activities	Target	Responsibility
(200) TOT on improved techniques of production and processing system	4 supervisors, 2 experts, (include women expert if possible), 2 para vets, 6 FTC staff	NAHRC (national animal health research center)/bureau of agriculture/project staff
(300) Farmers' training and follow up in FTCs on improved techniques of production and processing system	Farmers around 6 FTCs (include women if possible) and Da posts	FTC staff guided by woreda/project staff
(200) TOT in animal health and management.	4 supervisors, 2 experts, 2 para-vets, 6 FTC staff	NAHRC (national animal health research center)/bureau of agriculture/project staff

5.4.6 Noug (*Guizotia abyssinica Cass*.)

Marketing

Noug marketing is made through local traders mainly in the Woreda town. There is no service cooperative that buys from members and sells this commodity in an organized manner. In order to increase the value of noug it has been suggested that value added activities (small scale oil processing) need to be promoted, with appropriate quality control measures also put in place. Adet Research Centre, one of the major centres on oil crops, is very close to Fogera and will contribute to these activities.

Quality has been a major problem in marketing the commodity, especially when it comes from private traders in the area. Stones and other inert materials have been added during the selling of this commodity. Hence, bigger oil processing plants are hesitant of buying noug seed from Fogera traders. Hence opportunities exist for contract farming with the big oil processing plants in Bahir Dar and beyond, through which quality is also taken care.

Table 31. Project support on marketing

Activity	Target	Responsibility
(200) TOT of Cooperative staff in purchasing and storage of noug	1 Woreda Marketing expert, 2 Cooperative Desk experts, 5 Supervisors	Adet Research Centre, IPMS - TA
(200) Training on quality control	2 woreda agronomists, 2 Woreda Cooperative Experts (including	Oil processing plant in Bahir Dar and others,

during threshing, handling, storage and general agricultural practices (GAP) of noug	Marketing expert)	Adet Research Centre, IPMS - TA
(400) Study on cost benefit analysis of value added processing at cooperative level	11 FTCs (both farming system)	Adet Research Centre, ILRI (Theme 3, Market and Trade), IPMS - TA
(300) Farmer training on quality control and GAP	Farmers near 11 FTCs (both farming system)	FTC staff guided/supervised by (TOT) and project staff
(300) Organise farmers for contract farming with traders/factories	12 service cooperatives (3 credit and 9 multipurpose cooperatives (MP)), Group of farmers	Regional cooperatives promotion bureau, Bureau of Trade and Industry, IPMS - TA

Input supply

Noug is an indigenous crop to the area and planting material for this crop is supplied from local sources, farmer-to-farmer. Currently there are no improved varieties in the area, but Fogera is the main source of genetic material for the improvement programmes for Noug in the country. Noug is inherently low yielding (4-5 qt/ha), however, farmers are not used to applying fertilizers for this crop. Hence, other inputs like the use of bio-fertilizer/mycorrhyza (*Glomus macrocarpus*) will need to be assessed. Once association is quantified, it may be promoted there after. Farmers in Fogera area do not apply fertilizer on noug production.

Table 32. Project support on noug input supply

Activity	Target	Responsibility
(300) Facilitate supply of mycorrhyza as a source of fertilizer for testing purposes	11 FTCs (both farming system)	NSL, Adet Research Centre, IPMS - TA
(300) Facilitate supply of improved noug varieties (yield and oil content, like Shambu-1, Kuyu, Fogera-1, Este-1).	On farmers fields around 11 FTCs	Adet and Holleta Research Centres, Woreda input supply with funds provided from IPMS
(200) TOT for organizing farmer/cooperative seed production systems	2 agronomists, 5 supervisors, cooperative and Input supply experts, 11 FTC staff	Adet/Holleta Research Centres, Financial support from IPMS, Project staff
(300) Provide credit for on-farm seed multiplication	Interested farmers around 11 FTCs	ACSI through funds from the project
(300) Farmer and cooperative staff training and programme follow up (in FTCs) in establishing farm/cooperative seed production	Farmers in 11 FTC and staff of 12 service cooperatives	FTC staff guided by Wereda experts With financial support from IPMS
(200) Facilitate supply of demonstration materials on farm seed production, harvesting, processing (drying), in the form of pamphlets, posters, etc.	11 FTCs	Adet Research Centre or others; IPMS - TA

Production

It is expected that knowledge from the research is to be transferred to farmers through the existing FTCs in the area. Noug is grown in both farming system. The major problems addressed during the group deliberations were that problems with shattering and parasitic weed as the major problems in addition to the poor inherent genetic potential. Emphasis will also be put on increasing the linkages of farmers with oil processing factories in both Addis Ababa and Bahir Dar.

Table 33. Project support for noug production improvement

Activity	Target	Responsibility
(400) Study the effect of time of harvesting on quality and the use of mycorrhyza as a source of fertilizer for noug	Farmers around 11 FTCs and DA posts	NSL, Adet Research Centre IPMS - TA
(200) TOT on general agricultural practices on noug (production and protection systems including use of micorrhyza use).	2 Woreda oil crop agronomists, Staff from 11 FTCs	Adet Research Centre, IPMS - TA

(200) Training on participatory Technology Development (PTD), Farmer Field Schools, and other innovative ways, (contract farming) tapping the indigenous knowledge of the area in relation to noug production	Woreda agronomists and experts, including the team leader, 2 cooperative experts, 5 supervisors	ILRI Theme 2, IPMS - TA

5.4.7 Vegetables (Pepper, onion, tomato)

Marketing

As Bahir Dar is only 55 kms away, it is possible that this area could be a good source of these and other vegetables to the town. On the other hand, these commodities (mainly onions) are also sold to other neighbouring zones and regions including Tigray. The production of vegetable is practiced immediately after the rice is harvested in the Fogera plains (Rice/fish system), while it is vegetable after vegetable in the other system. All these vegetables are produced using irrigation (river diversion and shallow wells using manual or motor pump) systems. Middlemen have been reported to cause major problems in marketing vegetables. Strengthening the capacity of service cooperatives for marketing produces of own members or others could solve this problem. The fact that these vegetables have short shelf life has also been another major problem in marketing these commodities. However, the existing Service Cooperatives are not able to buy and sell these commodities because of lack of knowledge and sufficient capital. Demonstration and introduction of cool storage facilities developed at Adet is needed, especially for less perishable ones like onions so that if the commodity is not sold in one market it will enable it to be stored at least until the next market. These and other things need to be improved if marketing of these commodities is going to be successful. The marketing of these commodities is hence a major issue for the farmers. In addition to Bahir Dar, the meat and the tomato packing industries in Gondar, Gondar University, Ministry of Defence are other potential market sources for the produce and contact is needed with these institutions. The completion of the roads to both Addis and Sudan will also facilitate the exportation of some less perishable products.

Table 34. Project support for irrigated vegetables marketing

Activity	Target	Responsibility
(300) Formation of vegetable marketing groups.	Farmers around 11 FTCs and Da posts	Woreda Cooperative office and OoARD, IPMS - TA
(300) Training and follow up in the formation of marketing groups	Farmers around 11 FTCs and DA posts	FTC staff, guided by woreda and project staff
(300) Facilitate linkage between cooperatives and private traders/factories, including the Sudan.	16 Service Cooperatives in both systems (4 irrigation, 3 credit and 9 multipurpose cooperatives	Regional Cooperative Promotion and Trade and Industry Bureaus, IPMS - TA
(400) Study on the	Farmers around 11 FTCs	ILRI Theme 3 (Market and Trade),

market demand and supply and overall marketing of vegetables	and DA posts	Adet Research Centre, Project staff

Input supply

Most of the germplasm for vegetable is bought from small shops in the woreda town and are very expensive. There exists no farmer-to-farmer seed supply system and hence the cost of planting materials of these commodities is very high. Sometimes however, the produce itself is directly used as a planting material (eg. Potato, onion, etc). The major source of planting material, mainly for onions, is from farmers who specialise in vegetable seed production around Melkasa Research Centre. To increase the supply of vegetable seeds demanded by the farmers however, a farmer to farmer seed supply system needs to be developed. Farmer to farmer improved seed supply system could be organized through the Cooperatives Desk in the woreda. Other alternative options should be explored including on farm seed production linked to a cooperative distribution system or otherwise. Currently, there exist other arrangements in input supply of vegetables where private traders avail planting material, motor pump and fuel while farms avail land and labour and equally share the produce at the end.

Table 35. Project support for irrigated vegetable input supply system

Activity	**Target**	**Responsibility**
(200) TOT in organizing farmer on on-farm seed production system	2 Cooperative experts, 11 FTC staff and input supply desk experts	Melkasa EARO and project staff
(300) Provide training on on-farm vegetable seed production systems	Farmers around 11 FTCs	FTC staff supervised by Wereda experts, IPMS - TA
(300) Facilitate supply of improved planting material.	Farmers around 11 FTCs	Melkasa EARO/Project staff and input supply desk
(300) Provide credit fund for on farm seed production if required (probably year 2)	16 Cooperatives (4 irrigation, 3 credit and 9 MP cooperatives) and private farmers	Wereda Cooperative desk/ACSI with funds from IPMS
(300) Introduction of demonstration or training materials, like cold storage, improved hand tools, treadle pump, and other improved water harvesting mechanisms, low cost irrigation equipments, pamphlets, posters, etc.	11 FTC	Melkas Research Centre (EARO), and IWMI with funds from IPMS

Production

Vegetables are produced in both farming systems. The major vegetables in the rice system are onion, pepper and tomatoes are important. In the Cereal/livestock system, pepper tomatoes and onions are important crops. Production problems related to vegetables are lack of knowledge and high risk due to poor shelf life. In addition, there are a number of diseases and pests that are affecting the productivity of these vegetables. Water management issue due to silting up of shallow wells is also a problem because it requires annual digging of these shallow wells. On the other hand, the incidence of trypanosomes on cattle (mainly draught oxen) and malaria (humans) are also affecting vegetable production because these crops are especially grown after the main rains when these diseases are prevalent in the area. Vegetable farmers, mainly in rice/fish farming system rent in water pumps at 7 birr/hr from private traders in the woreda town or fellow farmers for irrigating vegetable fields. This is in addition to the system mentioned above (input supply)

Table 36. Project support for irrigated vegetable production

Activity	Target	Responsibility
(200) TOT in innovative vegetable production systems	2 Woreda horticultural experts, 11 FTC staff and 2 crop production and protection team leader	Adet and Melkasa (EARO), IWMI and project staff
(300) Establish new methods of shallow well digging on farms around FTCs for demonstration purposes	Farmers around 11 FTCs	FTC staff supervised by ToT and project staff
(300) Better ways of rain water harvesting techniques for the cereal/livestock farming system	5 FTCs	IWMI/OoARD IPMS - TA

5.4.8 Rice (*Oryza sativa* L.)

Marketing

This will be conducted to contribute to improving the marketing and quality of rice. Post harvest process and quality added activities (better packing, storage etc) for better marketing would be conducted. Sasakawa Global 2000 has promised to import a polisher machine for the rice growers in Fogera. This will have a significant positive impact on marketing rice. Currently, polished rice is sold around 300 birr/qt while the unpolished is sold at 180 birr. Rice is sold to many regions in the country, including Dire Dawa, Somalia and Gambella. There is a high potential for marketing this crop even beyond its current marketing area, because, if the management in rice production is improved and the acreage is also increased, the amount of rice to be produced from this PLS will be very big. Hence, assessment of means of delivering rice to whole sellers or potential buyers will need to be conducted without the involvement of intermediaries. Overall, cost benefit analysis for all identified commodities will be needed, including rice, from which gaps and possible interventions will be identified.

Table 37. Project support in rice marketing improvement

Activity	Target	Responsibility
(400) Study on cost benefit analysis of rice production system	Farmers in 5 FTCs	Adet Research Centre, Project staff and other collaborators
(300) Provide credit fund for improved storage	12 Cooperatives (3 credit and MP cooperatives)	ACSI with funds from IPMS/ project staff
(300) Provide revolving fund to cooperatives to purchase rice during harvest period and sell during better periods	12 service co-operatives (3 credit and 9 MP cooperatives)	ACSI, with funds from IPMS
(300) Link for market opportunities between cooperatives and potential buyers	12 service co-operatives (3 credit and 9 MP cooperatives	Regional Bureau of Trade and Industry/Regional Bureau of Cooperative Promotion

Input supply

There is only one type of rice variety called Ex-Jigna, which require a 5 months growing period and yield up to a maximum of 80 and a minimum of 20 q/ha, but due to continuous reusing of this variety the yield is deteriorating and is at about 35 qt/ha on an average. It is now time to replace this variety by new varieties or get new basic seed of this variety which can be obtained from Adet Research Centre. On the other hand, other varieties may also be obtained from other Centres, like the New Rice for Africa (NERICA) from WARDA. These new varieties are currently being tested in Adet Research Centre. Fertilizer use is not possible on the Fogera plain, as rice field gets flooded with silt from the top of the hills. Hence, application of bio-fertilizer option has been identified. This bio-fertilizer is expected to increase yield of rice up to 60 q/ha.

Table 38. Project support on input supply of rice

Activity	Target	Responsibility
(100/200) Supply demonstration materials like manual threshers, fuel wood block makers from rice husk, pamphlets, posters and others materials on rice with topics from production to marketing and translate and avail these materials (mostly pictorial presentations) around FTCs	5 FTCs	WARDA/IRRI/Adet Research Centre, IPMS - TA
(300) Training of private small scale cottage industries in manufacturing and maintaining of rice post harvest equipments	Private machinists/wood workers, Rural Technology Centres, interested farmers near 5 FTCs	WARDA/IRRI/Adet Research Centre, IPMS - TA

(300) Help in obtaining improved post harvest technologies of rice (polishing) through provision of SG-2000	4 service co-operatives	SG-2000 Regional BoARD/Woreda OoARD IPMS – TA
(300) Provide new planting materials	Farmers around 5 FTCs	Adet Research Centre/WARDA/IRRI IPMS - TA
(200) TOT in input supply/output marketing and rural finance,	1 each from Cooperative, Extension, input supply coordination officer, marketing expert. Private traders need also to be trained.	Theme 3 (Market and Trade) IPMS - TA
(300) Facilitate the supply of bio-fertilizer	Farmers around 5 FTC	NSL, Adet Research Centre with funds from IPMS

Rice production and natural resource management

Currently, rice is produced from 4516 ha, but there is a plan to increase the area to 15,625 ha. There is only one variety (Ex-Jigna) that has been introduced. Broadcasting is the method of sowing used in the area, even though it is suggested that better yield could be obtained through transplanting. Best rice varieties and ways of producing this commodity is essential because of high potential in improving livelihoods of farmers in the area. Currently, rice is produced without fertilizer because flood supplies the fertiliser requirement. However, with improved watershed management practices in place in the uplands, this may not be sustainable. This therefore requires other sources of fertility, mainly the use of *Azolla anabaena* symbiosis on rice. Experts believe that the area is conducive for growing *Azolla anabaena*.

Table 39. Project support for rice production

Activity	**Target**	**Responsibility**
(200) TOT in the production and use of *Azolla anabaena* on rice	2 Regional agronomists, 4 woreda supervisors and 1 expert, 5 FTC staff	NSL/Adet/ IPMS - TA
(200) TOT in rice agronomy (transplanting, land preparation) and seed production including NERICA varieties.	Training of 4 supervisors and 1 expert, 5 FTC staff	Adet Research centre, IPMS - TA
(400) Study on the existing rice production systems	Farmers around 5 FTCs	Adet Research Centre/IRRI/WARDA, Project staff
(300) Training on integrated watershed management	Farmers around 6 FTCs in the cereal/livestock system	ILRI Theme 5/BoARD IPMS - TA

5.4.9 Chick Pea (Cicer arietinum L.)

Marketing

To support the marketing of chickpea changes are required in the production and marketing system. Currently local chickpea varieties are grown in the area while the export type (Kabuli, white variety) is not grown in the area. Once it is introduced to the area, the first step would then be to link up the farmers with the potential Addis based exporters. This linkage should also be used to assess the market potential for the existing variety. Since and service cooperatives could be involved in this linkage. As for the other crop commodities, knowledge in cost benefit analysis of growing chickpea is also required. Cooperatives need to be strengthened through provision of funds to purchase and store chickpea; construction of storage facilities and training of cooperative staff in chickpea purchasing and storage will be emphasized. On the other hand, contract farming arrangements between exporters and service cooperatives could also be made.

Table 40. Project support for Chickpea marketing

Activity	Target	Responsibility
(200) TOT of Cooperative staff in purchasing, storage and quality control of export chickpea	1 Woreda Marketing expert, 2 Cooperative Desk experts, 5 Supervisors, 5 FTC staff	Adet Research Centre/Debre Zeit Research Centre, IPMS - TA
(200) TOT on the improved agronomic practices and organizing for contract farming on chickpea	2 woreda agronomists, 2 Woreda Cooperative Experts (including Marketing expert), supervisors, 5 FTC staff	ICARDA/Debre Zeit Research Centre, IPMS - TA
(400) Study cost benefit analysis of chickpea production and marketing	Farmers around 5 FTCs and DA posts	ICARDA/ILRI Theme 3 (Market and Trade), Debre Zeit/Adet Resrach Centres, Project staff
(200) Training on cost benefit analysis	1 Woreda Marketing expert, 2 Cooperative Desk experts, 5 Supervisors, Staff from 5 FTCs	ICARDA/Debre Zeit Research Centre/Adet Research Centre, IPMS - TA
(300) Farmer and cooperative staff training and program follow up at FTCs in community based market and production systems	Farmers and cooperatives around the 4 service cooperatives and 5 FTCs	FTC staff, guided and supervised by Woreda staff

Input supply

Kabuli type of Chick pea varieties like Arerti (1995), Shasho (1995), Harbu (2003), and Chefe (2003) which are already developed by research centers and can be easily introduced into the area. It has been reported that these varieties could yield 32 qt/ha on average, which is much higher than what is currently produced (around 8 qt/ha),

Table 41. Project support for Chick pea input supply system

Activity	Target	Responsibility
(200) TOT in organizing farmer/cooperative on seed production system	2 Woreda agronomists, 5 supervisors and 2 input supply experts (3) and cooperative experts (3) and 5 FTC staff	ICARDA/Debre Zeit and Adet Research Centre, IPMS - TA
(300) Farmer and cooperative staff training and program follow up at FTCs in establishing farm/cooperative seed production system.	Interested farmers around the 5 FTCs and staff of 4 service cooperatives	FTC staff supervised and guided by Woreda, ICARDA/AHI/ Debre Zeit Research Centre, IPMS - TA
(300) Facilitate supply of improved seed material (export type)	5 Multipurpose service cooperative	Debre Zeit and Adet Research Centres, input supply desk, IPMS - TA
(300) Facilitate supply of inoculums for testing program (see production)	5 Multipurpose service cooperative	National Soils Laboratory with project funds
(200) Supply demonstration materials including posters on pest, soil and water management, special plough, inoculums, fly trap, and on farm seed production materials	5 FTCs	ICARDA/Debre Zeit and Adet Research Centres/ ICIPE/NSL IPMS - TA
(300) Provide credit fund for on farm seed production if required (probably year 2)	12 Service Cooperatives	ACSI with project funds

Production

During 2004, local variety of chickpea is produced from 2776 ha in which about 16,656 quintals has been produced, but there is a potential to double this production with the introduction of the new Kabuli varieties. Chickpea production is based on residual moisture in the rice/fish system following the rice crop. The most important production problems related to chickpea production which need to be addressed are disease (wilt, root rot, rust), insect (cut worm, African boll worm, aphids) and storage pest like weevils. Other production problems to this crop are also malaria and trypanosomes. This is because chickpea is produced after the rainy season when these two diseases (livestock and human) are more prevalent in the area.

Table 42. Project support for chickpea production

Activity	Target	Responsibility
(200) TOT Training on general agricultural practices on chickpea (pest and diseases and improved crop husbandry, bio fertilizer use).	Crop protection specialist (1) and agronomist (2) and 5 FTC staff	NSL, Debre Zeit/Adet Research Centre, IPMS - TA

(200) TOT on malaria and Trypanosomes control	Livestock experts (2) and 5 FTC staff, 2 supervisors	Woreda health bureau, ICIPE/ILRI Theme 4 IPMS - TA
(300) Farmer training and program follow up at FTCs on chickpea production and disease control systems	Interested farmers around 5 FTCs in the rice/fish farming system and DA posts	FTCs under the guidance and supervision of Woreda experts

5.5 Recommendations on innovative technology (practices) and institutional innovations (400 series)

A number of studies have been proposed (see RBM code 400) to assess technologies, and input output marketing aspects of priority commodities. During the project life the introduction of these innovations will be closely monitored (see 300 activities) to enable the project and its partners to draw up recommendations on technologies and public and private institutional innovations.

Most of the studies on technologies and institutional innovations cut across several PLS and the findings of the studies will be synthesized across these sites. These will be used to draw lessons on the uptake and impact of technology innovations as well as institutional innovations for marketing (in particular marketing studies and clustering of small farmers with linkages to the larger trade bodies) and the supply of inputs for crops and livestock. Particular attention will be paid to the impact of these innovations on gender and environment. The synthesized findings will contribute to policy recommendations at the federal and regional level.

Besides the studies already indicated, the project will undertake a baseline and follow up study on some key indicators. Such base line data will be gender disaggregated and also include environmental indicators. Guidelines for the baseline data collection can be found in Project implementation Plan.

The project will also prepare environmental briefs for each of the PLS as well as HIV/AIDS and gender studies in 2 Kebelles of each farming system. Guidelines for the preparation of the briefs and the gender and HIV/AIDS studies were prepared by the project consultants and are included in the Annexes attached to the project implementation plan. Planning workshops will be held to present and discuss the findings of the HIV/AIDS and gender studies.

Annex 1. Baseline data (Fogera Woreda)

Annex 1.1- Land use

Land use type	**Area (Ha)**	**Percentage**
Cultivated land	51,472	43.8
Pasture land	26,999	23.0
Forest	2,190	1.8
Water bodies	23,354	19.9
Road and houses	7,075	6.0
Fruit crops	251	0.2
Swamps	1,689	1.5
Wasteland	4,375	3.8
Total	117,405	100

Source: Fogera woreda, OoA

Annex 1.2- Land use by type of crop and Yield

	1998/99		**1999/00**		**2000/01**		**2001/02**		**2002/03**	
Crop Type	**Ha**	**Yield**	**Ha**	**Yield**	**Ha**	**Yield**	**ha**	**Yield**	**Ha**	**Yield**
Cereals										
Teff	11519	50064	7986	44716	7782	47471	8645	44245	14839	90060
Barley	2857	31087	3852	30806	4115	33111	3417	31371	982	10647
Wheat	206	1524	214	2378	240	2137	240	2554	180	2162

Emmer Wheat	144	574	182	910	182	910	185	925	206	1030
Finger Millet	7541	47423	7548	65725	8127	82868	8778	52261	7700	77104
Rice	1968	6041	2907	93973	3037	66830	3346	99543	3980	116683
Maize	5010	30659	4846	59365	5112	57942	6153	50140	6612	81855
Sorghum	673	3323	998	7242	750	6739	750	7460	248	1984
Sub Total	29,918	170,695	28,533	305,121	29,345	298,008	31,514	288,499	34,747	381,525
Pulses	ha	Yield	ha	yield	ha	yield	ha	yield	ha	yield
Faba bean	482	3821	397	2142	484	2778	592	2960	485	2970
Haricot .bean	467	3720	484	2800	381	2556	385	2310	344	2064
Lentils	1342	6504	1447	7054	1517	6029	1325	3975	880	2640
Chick Pea	29990	2193	3430	25622	3430	23141	3030	15150	2776	16656
R.Pea	4162	37081	5290	52949	5296	44896	3973	27811	5017	3426
Sub Total	35,976	53,319	11,048	90,567	13,490	7940	9305	52,206	9,502	27,756
Oil Crops										
Noug	5026	27337	5536	20,707	4707	17,213	4705	14,661	5886	23,446
Flax	265	1055	256	945	256	968	286	1144	9	36
Rape Seed	287	1148	394	1336	394	1433	147	588	57	228
Sun Flower	96	384	101	404	153	612	135	540	146	584
Sub total	5674	29, 924	6,287	23,392	5510	20,244	5291	16,933	6098	24,558

Land use by type of Crop and Yield

	1998/99		1999/00		2000/01		2001/02		2002/03	
Crop Type	**Ha**	**Yield**	**Ha**	**Yield**	**Ha**	**Yield**	**ha**	**Yield**	**Ha**	**Yield**
Vegetables										
Onion									13.5	1350
Tomato							3.68	1104	5	1000
Potato							366	21960	295	17680
Others									5.5	725
Sub Total							**369.68**	**23,064**	**319**	**20,755**
Cash crops										
Pepper							1443	5300	863	6337
Cotton							240	1200	267	1335
Coffee							49.8	149	19.8	149
Sub total							**1732.8**	**6649**	**1149.8**	**7821**
Fruits										
Orange									0.75	20
Lemon									2.25	225
Papaya									16.9	2523
Mango									1.04	104
Banana									0.87	43
Avocado									0.77	230
Sub Total									22.58	3145
Grand Total	**71,568**	253,938	45,868	419,080	48,345	326,192	**48,213**	387,351	**51,839**	**465,560**

Source: Fogera woreda, OoA

Annex 1.3- Market Price of some commodities (2003)

Type	Unit	Average price in birr	Remark
Dairy Butter	Kg	18	
Liquid milk	Lt	0.60	
Hen	No	8	
Cock (White)	No	10-12	
Cock (Black)	No	5	
Egg	No	3 / birr	
Cereals/pulses			
Teff(White)	Kg	2.90	
Teff (Red)	Kg	2.50	
Teff (mixed)	Kg	2.70	
Maize	Kg	1.45	
Lentils	Kg	3.00	
Rice	Kg	2.50	
Noug	Kg	3.10	
Chick pea	Kg	1.85	
Rough peas	Kg	1.65	
Finger millet	Kg	1.60	
Barley	Kg	1.70	
Sheep	No	150-280	
Goat	No	95-120	
Cow (local)	No	500-600	
Cow (cross)	No	3500	
Ox	No	850-1100	
Donkey	No	250-300	
Mule	No	1350-1500	
Honey	Kg	8-15	
Bee hive	No	180	Zander type

Source: Fogera Woreda, OoA

Annex 1.4. Number of cooperatives in Fogera Woreda and total capital as of 2003

No.	Name of Cooperatives by Service Type	Members			Family size of Members			Capital, Birr		
		Male	Female	Total	Male	Female	Total	Variable	Fixed	Sum
	Multipurpose coop									
1	Alem Ber	1,575	269	1,844	3,687	5,839	9,526	69,055.16	115,057.80	184,112.96
2	Bebeks	862	91	953	1,713	1,616	3,329	81,678.53	122.64	81,801.17
3	Zeng	689	38	727	2,210	1,101	3,311	46,065.15	15,054.50	61,119.65
4	Woreta Zuriya	795	253	1,048	1,795	1,804	3,599	34,778.18	4,161.51	38,939.69
5	Quhar	577	42	619	2,093	2,347	4,440	12,452.90	3,397.80	15,850.70
6	Guranba	1,278	72	1,350	2,590	2,130	4,720	39,084.57	1,125.30	40,209.87
7	Adis Betkrstiyan	1,381	200	1,581	3,149	4,721	7,870	50,841.43	363.31	51,204.74
8	Fafuat Gazen	446	27	473	946	1,419	2,365	23,887.87	3.00	23,890.87
9	Woj Awranba	1,258	604	1,862	3,000	3,810	6,810	43,000.20	114.60	43,114.80
	Sub Total	**8,861**	**1,596**	**10,457**	**21,183**	**24,787**	**45,970**	**400,843.99**	**139,400.46**	**540,244.45**
	Irrigation coop									
10	Lomi Dur	211	14	225	381	480	861	30,919.50	423,478.83	454,398.33
11	Brinto & Timqete-Bahir	81	5	86	194	206	400	3,805.00		3,805.00
12	Brgina Mariyam	53	4	57	131	110	241	1,345.00		1,345.00
13	Worq Meda	72	11	83	213	201	414	2,610.00		2,610.00
	Sub Total	**417**	**34**	**451**	**919**	**997**	**1,916**	**38,679.50**	**423,478.83**	**462,158.33**

Ser.No	Name of Cooperatives by Service Type	Members			Family size of Members			Capital, Birr		
		Male	Female	Total	Male	Female	Total	Variable	Fixed	Sum
	Credit & Saving coop									
14	Woreta Primary School	121	95	216	322	381	703	11,300.00		11,300.00
15	Erzana Tishkna	36	19	55	52	91	143	16,880.00		16,880.00
16	Gonder Ber	54	5	59	137	131	268	2,000.00	199.00	2,199.00
Sub Total		**211**	**119**	**330**	**511**	**603**	**1,114**	**30,180.00**	**199.00**	**30,379.00**
Grand Total		**9,489**	**1,749**	**11,238**	**22,613.00**	**26,387**	**49,000**	**469,703.49**	**563,078.29**	**1,032,781.78**

Source: Fogera woreda, OoA

Note: Woreta Primary School and Erzana Teshkena cooperatives are located in Woreta town.

Annex 1.5 - Amount of credit delivered by multipurpose cooperatives up to 2004.

No	Cooperatives	Credit Type									
		Fertilizer Credit			Irrigation(birr)		Livestock(birr)				
		DAP (kg)	Urea (kg)	Amount (birr)	Water pump (birr)	Vegetable seed (birr)	Goat	Poultry	Bee hive	Crossbred dairy	Fattening
1	Zeng	118	118	641,930.70			31,635.00				
2	Alember	54.5	54.5	29,395.85		1,134.00	63,765.00	954.00	113.274.00	10,800.00	36,879.90
3	Woji Arbanba	281	279.5	146,195.94	27,700.00	8,424.00	20,475.00		9,939.35	18,003.00	5,729.70
4	Addis Bete Kiristian	321.25	321.25	170,383.00			25,155.00			10,800.00	
5	Wereta Zuria	266	245	137.040.61		45,198.00	21,645.00	5,922.30	31,248.00	24.300.00	26,996.00
6	Quhar	295	631	139,141.67			11,115.00	3,936.80	60,682.50	20,700.00	

7	Bebeks	897.25	631.5	414,260.73	41,550.00	14,550.00					6,455.20
8	Guranba	1425.75	931.5	631,734.18							
9	Fuafuat	192.5	177.5	84,020.65	27,700.00	27,700.00					
Total		**3851.25**	**3019.2**	**2,394.103.33**	**96,950.00**	**69,498.00**	**173,790.00**	**10,813.10**	**215,143.85**	**84,603.00**	**76,060.80**
No of loan receivers				9191		429	300	107	112	94	572

Source: Fogera woreda, OoA

Annex 1.6 - Soil And Water Conservation Activities 1994 – 2003

No	Activities	Unit	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Sum
1	Total Terrace	Ha	97.3	415.59	495.26	707.46	2753	2938.5	1514	1726.08	280.94	757.5	11685.63
2	Stone Terrace	>>	62.2	407.47	369.70	609.16	2293.2	2445.8	1186	1283.87	202.47	684	9543.87
3	Soil Terrace	>>	34	8.12	121.4	95.73	441.25	406	299	404	62.82	73.5	1945.82
4	Terrace Maintenance	Km	2.3	51.6	202.4	352			700	404			1712.30
5	Constriction	>>	0.97	0.14	303	1.35	2.345	5.7	6.4	6.85	1.9	67.755	396.40
6	Constriction Maintenance	>>	0.17		0.0021	1.345	1.87	4.45	4.3	4.6		20.3	37.03
7	River Diversion	>>	1.87	0.92	1.43	1.29	3.4	3.8	6.5	6.8	3.8	1.1	30.91
8	River Diversion Maintenance	>>	1.67	0.07	0.75	0.48	1.89	3.4	___	___			7.51
9	Road Construction	>>	39.6	9	26		5		34.5	___	189		303.10
10	Road Maintenance	>>	26.16	28	97	49.9	55	56	___	31	11.75		354.81
11	Spring Development	No	67	92	30	123	177	189	131	138		13.759	960.75
12	Hedge Planting	Km						2					2.00
13	Drainage	Km							6.2	6.15	3.92		16.27

Source: Fogera woreda, OoA

Annex 2. Program of visit to PLS

Annex 2.1- Methodology of PLS plan development

The first step in the PLS planning was the introduction of the IPMS staff with the regional Ministry of Agriculture officials, regional research staff and RALC members. The next step was the introduction of the IPMS team with the woreda office of agriculture administration and technical staff, followed by the creation of a woreda Advisory Learning Committee (WALC), see annex 2.2. The next step was the identification of the major farming systems in the PLS and the potential market commodities within them, together with the WALC members and based on the commodities identified in the strategic plans prepared by the regional and *woreda* agricultural staff. Farming systems and potential commodities were then discussed with the various *Woreda* agricultural service institutions (crop, livestock, natural resources, cooperative department, women affairs and HIV/AIDS officials)[1]. This was followed by field visits to the selected farming systems by teams (two to three) consisting of project staff, project research partners and *Woreda* staff. During these field visits, semi-structured interviews were conducted with field staff (DAs and supervisors) and community members (male as well as female) to explore the nature of the farming system, to identify the major marketable commodities and their production methods/problems (including natural resource management), input supply and marketing arrangements. Problems associated with the production to marketing continuum of the identified commodities were also discussed. Triangulation technique was used in order to validate information. The suitability and possibility of introduction of new commodities was also explored and discussed[2]. The findings of this initial PRA were then summarized, presented and discussed in a 2-day PLS planning workshops (one in each PLS) which were attended by representatives from the RALC, WALC, *Woreda* experts, DAs, community representatives, male and female farmers, NGOs, and national and international research partners.

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[1] To facilitate this process the project staff had collected/prepared secondary data on the PLS, including GIS referenced maps with bio physical and socio economic data.
[2] The project team prepared guidelines for these PRA of institutions and community members as well as some notes on the different methods to be used for the PRA.

Annex 2.2 List of WALC members and telephone address.

No	Name	Title	Telephone
1	Ato Ayehu Zerihun	Fogera Woreda Agricultural & Rural Dev. Head	08 460027
2	Ato Meles Liyeh	Deputy Head, Fogera Woreda Agricultural and Rural Development Head	08 460064
3	Ato Sentayehu Ayal	Fogera Woreda Small Scale Trade and Industry	08 460168

4	W/O Agegnehu Siraj	Fogera Woreda, Women's Affairs Office	08 460169
5	Ato Umar Meles	Fogera Woreda, HIV/AIDS Secretariat	08 460132
6	Ato Muche Yalew	Amhara Credit & Saving Institution (ACSI), Fogera Woreda	08 460416
7	Ato Tarko Getenet	AISCO, Fogera Woreda	-
8	Ato Worku Mulat	Fogera Woreda Cooperatives Promotion Desk	08 460048
9	Ato Wale Dessie	Fogera Woreda Natural Resource Development Desk	08 460048
10	Ato Nurhusen Muche	Fogera Woreda Input and Credit Supply and Distribution Desk	08-460048
11	Ato Dereje Beruk	Amhara Region Agricultural & Rural Development, RALC Representative	09407264
12	Ato Yirgalem Asseged	PLS Research and Development Officer	09-763664

Annex 2.3. Fogera PLS planning workshop programme , October 1-2, 2004 Woreta Town

Date	Time	Topic	Speaker
Oct.1, 2004	9:00 - 9:30	Registration and Honey Extractor Demonstration	Ato Tilahun Gebey, regional co-ordinator, SOS Sahel
Moderator - Ato Abebe Misgina			
	9:30-9:45	Welcome and Introduction	Ato Ayehu Zerihun (Wereda Ag. And Rural Development, Head, WALC Chair) Dr. Gete Zeleke, ARARI Director or Ato Adebabay Mengest (Regional Agricultural and Rural Development, Representative
	9:45 - 10:00	Project Back Ground	Mr. Dirk Hoekstra
	10:00 - 10:10	PRA Process, Farming Systems and Priority Commodities	Dr. Azage Tegegne
	10.00-10.30 Coffee Break		
	Chair Person – Ato Adebabay Mengest		
	10:30 - 10:50	Crop Production	Dr. Azage Tegegne
	10:50 - 11:00	Questions/Discussion	

	11:00 - 11:20	Animal Production	Dr. AzageTegegne
	11:20 - 11:30	Questions/discussion	
	11:30 - 11:50	Institutions	Ato Abebe Misgina
	11:50 - 12:00	Questions/discussion	
	12:00 - 1:00	General discussion	
	1:00 - 2:00	Lunch break	
	2:00 - 5:30	Breakup session	
		Group 1. Crop production	Chair Dr. Berhanu .Gebre Medhin
		Group 2. Livestock production	Chair Dr. Azage Tegegne
		Group 3. Institutions	Chair Ato Abebe Misgina
Oct. 2, 2004	9:00 - 10:00	Breakup session continued	
	10:00 - 10:30	Coffee break	
	10:30- 12:30	Group Discussion	
	1:00 - 2:00	Lunch break	
	Chair Ato Fekade Tilahun		
	2;00-2:20	Group 1 Crop report	Dr. Berhanu G/ Medhin/Kahsay Berhe
	2:20 -2:40	Questions/discussion	
	2:40 - 3:00	Group 2 Livestock report	Ato Dr. Azage Tegegne
	3:00 -3:20	Questions/discussion	
	3:20 - 3:40	Group 3 Institutions report	Mr. Dirk Hoekstra
	3:40 - 4:00	Questions/discussion	
	4:00-4:50	General discussion	
	4:00 - 5:00	wrap up and the way forward session	Mr. Dirk Hoekstra
	5:00	Closing	Ato Worku Baye, Fogera Wereda Administrator)

Annex 2.4. Fogera PLS Planning Workshop Participants list, October 1 - 2, 2004, Woreta Town

No	Name	Number
	WALC (woreda agricultural learning committee)	11
1	Ato Ayehu Zerihun (Woreta Woreda Agricultural & Rural Development Head) WALC chair	
2	Ato Worku Baye (Woreda Administrator, member)	
3	Ato Melese Lyhe (Deputy Ag. & Rural Development Head , member)	
4	Ato Oumar Melese (HIV/AIDS Secretariat, member)	
5	Ato Sentayehu Ayal (Small Scale Trade and Industry, member	
6	W/o Agegnehu Siraj (Womens' desk), member	
7	Ato Nurhusen Muche (Input supply), member	
8	Muche Yalew (ACSI, Amhara Credit and Saving Institution), member	
9	Ato Tarko Getenet (AISCO, Agricultural Input Supply Corporation), member	
10	Ato Wale Dessie (Natural Resource Development & Protection Desk), member	
11	Ato Worku Mulat (Cooperation Promotion Desk), member	
	RALC (Regional Agricultural Learning Committee)	2
1	Ato Adebabay Mengest, Representative, Regional Agricultural and Rural Development Bureau	
2	Dr. Gete Zeleke, ARARI	
	Other Invited Guests from the Region	2
1	Ato Tilahun Gebey, Regional Bee Keeping Coordinator, SOS Sahel International, UK	
2	Ato Abay Akalu, Cooperatives	
	Woreta Technical, Vocational , Educational and Training College (TVTC)	1
1	Ato Bimerew Ayenew, College Dean	
	Fogera Wereda Ministry of Agriculture Technical Staff	15
1	Ato Zewdu Almaw (Livestock Desk and Apiculture expert)	
2	Ato Alemayehu Wale (Agronomist)	
3	W/o Debre Kassa (Agronomy desk)	
4	Ato Habte W/ Sellasie (Animal Science Expert)	
5	Ato Ashagre Abate (Fisheries Expert)	
6	Dr. Anwar Nur (Veterinarian)	
7	W/o Kenu Abate (Horticulturist)	
8	Ato Abraham Muche (Extension desk)	
9	Ato Zewdu Adera (AI technician)	
10	W/o Askale Girma (Planning and Information Service)	
11	W/o Zewditu mengesha (Development Agent)	
12	Ato Dejen Berhane (Development Agent)	

13	Ato Belete Tegegne (Development Agent)	
14	Ato Mengesha Alene (Supervisor)	
15	W/o Abez Asres (Development Agent)	
	ILRI Staff, Collaborators and Consultant	8
1	Mr. Dirk Hoekstra (IPMS Project Leader	
2	Dr. Berhanu Gebremedhin (IPMS project)	
3	Dr. Azage Tegegne (IPMS project)	
4	Dr. David Macdonald (consultant, IPMS project)	
5	Ato Fekade Tilahun (Federal Ministry of Agriculture, Extension Group Leader)	
6	Mr. Philippe Lemperiere (International Water Management Institute)	
7	Ato Abebe Misgina (Senior Research Technologist, IPMS project)	
8	Ato Kahsay Berhe (Senior Research Technologist, IPMS project)	
	ARARI (Amhara Regional Agricultural Research Institute) Senior Staff	5
1	Dr. Eshete Dejen (Fisheries and Livestock Acting Director)	
2	Dr. Tsege Getenet, Adet Rice Research	
3	Ato Baye Zerihun, Cereal Research Expert	
4	Ato Addisu Bitew, Andassa Livestock Research Expert	
5	Dr. Sewagegne Tariku, Rice Research Expert	
	Farmers From Fogera Woreda Peasant Associations (both farming systems)	16
1	W/O Negest Tiru, Woreta Zuria PA	
2	W/o Enanu Hailu, Kuhar Michael PA	
3	Ato Mola Belew, Tihua PA	
4	Ato Gebre Mersha, Tihua PA	
5	Ato Muche Getahun, Tihua PA	
6	Ato Damte Endalew, Kirstos Samra PA	
7	Ato Amare Tefera, Nabega PA	
8	Ato Kidanu Ashagre, Kuhar Abo PA	
9	Ato Asnakew Anmut, Kuhar Abo PA	
10	Sergeant Belachew Abebe, Bebks PA	
11	Ato Tseganew Mesfin, Shena PA,	
12	Ato Belachew Abebe, Bebeks Cooperative Head	

13	W/o Tsehay Alene, Kuhar Michael PA	
14	W/o Yeshareg fantahun, Shaga PA	
15	W/o Bere Mehrete, Reeb Gebrael PA	
16	W/o Amelmal Chane, Woreta Zuria PA	
	Total participants	60

Annex 2.5. List of farmers and Peasant Associations visited in Fogera

No	Farmer name	Peasant Association	Farming system
1	Ato Tarekegne Abdulkader	Tihua Abua	Cereal/Horticulture/Apiculture
2	Blata Wase Meshageria	Tihua Abua	Cereal/Horticulture/Apiculture
3	Ato Molla Taye	Tihua Abua	Cereal/Horticulture/Apiculture
4	Ato Tarekegne Segede	Tihua Abua	Cereal/Horticulture/Apiculture
5	Ato Asmamaw Birara	Tihua Abua	Cereal/Horticulture/Apiculture
6	Ato Worku Siraj	Alem ber	Cereal/Horticulture/Apiculture
7	Osman Siraj	Alem ber	Cereal/Horticulture/Apiculture
8	W/o Tsehay Alene	Quhar Michael	Rice/Fish/Livestock
9	Ato Tadele Dinku	Quhar Michael	Rice/Fish/Livestock
10	Ato Andualem Yirdaw	Shena	Rice/Fish/Livestock

Annex 2.6. List of institutions and officials visited in Bahardar and Fogera

No	Name of person	Organization	Responsibility
1	Ato Dereje Beruk	BoARD, Amhara region	Deputy head and RALC chair
2	Ato Teshome Wale	BoARD, Amhara region	Deputy head
3	Dr. Getachew Alemayehu	ARARI, Amhara region	Director of crop research
4	Dr. Eshete Dejen	ARARI, Amhara region	Fisheries &Livestock Acting Director
5	Ato Yalew Zenawi	Fogera Woreda Administration	Acting woreda administration
6	Ato Abebayehu Alebachew	Capacity Building	Woreda head
7	Ato Muche Yalew	ACSI	Woreda head
8	Ato tarko Getenet	AISCO	Woreda head
9	Ato Omar Meles	HIV/AIDS	Woreda head
10	Ato Desalegne Alem	Woreta High School	ICT Technician
11	Ato Zewdu nahusenay	Press and Information	Head of office
12	Ato Mekonen Adem	TVTC	Deputy college dean
13	Ato Alemu Tilahun	Fogera MOA/GTZ nursery	Nursery worker (OoA)
14	Ato Selelew Abebe	Fogera MOA/GTZ nursery	Nursery worker (GTZ)

Annex 2.7. Consultation workshop on pilot learning site, October 19-21, 2004 ILRI, Addis Ababa, Ethiopia

Objective: Is to share the findings of previously selected priority commodities at the woreda level and outline specific action plan of work for selected commodities and identified natural resource management activities in four PLSs (Fogea, Atsbi Wenberta, Ada'a liben and Dale).

IPMS staff, Mr. Dirk Hoekstra, Ato Kahsay Berhe, Dr. Azage Tegegne, Dr. Berhanu G/M, Ato Ermias Sehai presented results obtained during the PRA process in the above PLSs. Mr. Jerry Rogers, Mr. David Mac Donald, Misses Clare Bishop Sambrook also gave presentations on result based management, environmental impact assessment and gender and HIV/AIDS respectively.

Working Group

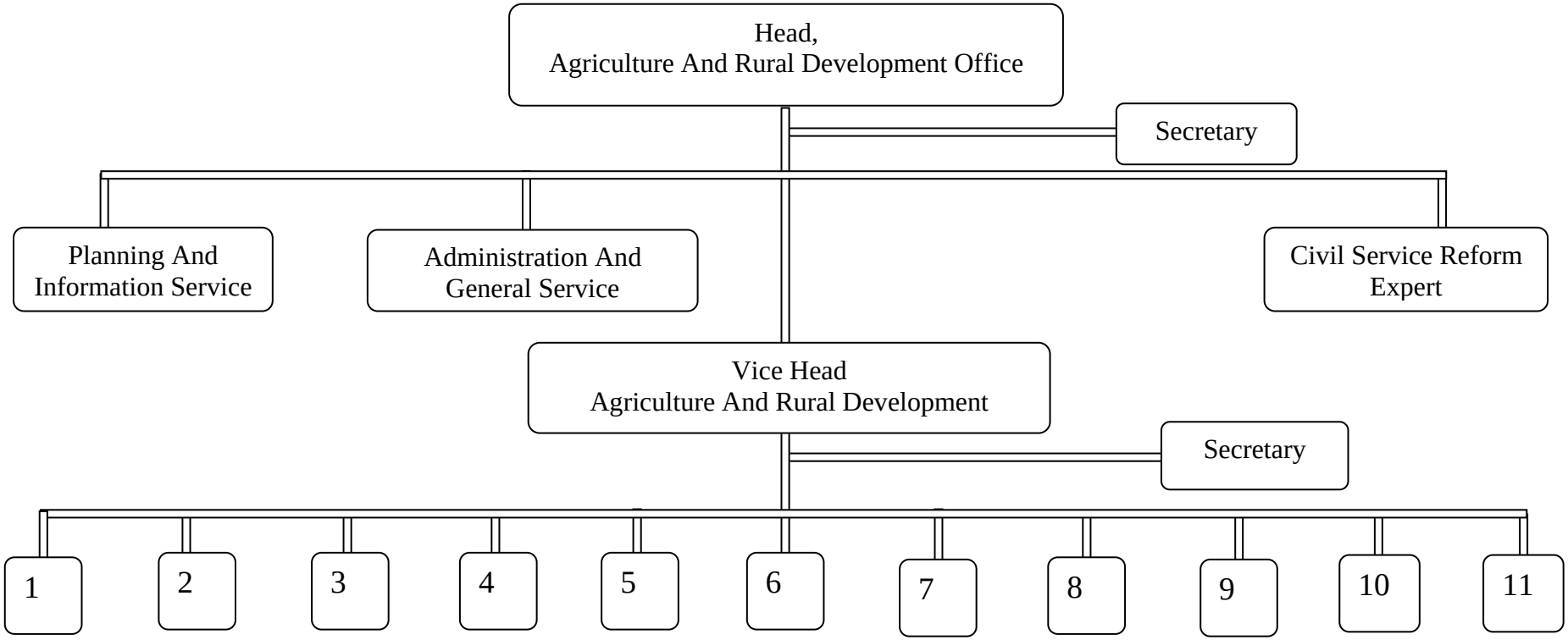
After the deliberations, participants were divided in to PLS groups according to their area of interest and from which PLS they come from. Activity sheet was prepared for discussion by IPMS team on which each group discussed and recorded action plan to be undertaken in the coming one year. These activities had focused on knowledge management, capacity building for institutions, sustainable production and livelihoods and development for each priority commodity. David MacDonald went around the four PLS group and collected some basic information regarding environmental issues and Clare Bishop Sambrook clarified about HIV/AIDS issues in the activity sheet. Abebe Misgina and Kahsay Berhe led the Fogera group. (see section 5.4.1-5.4.9 of the document "Fogera Woreda Pilot Learning Site, Diagnosis and Program Design, October, 2004".

List of consultation workshop sub-working group, Fogera PLS (October 19-21), Addis Ababa, Ethiopia

No	Name	Organization	Responsibility	Telephone
1	Dr. Tsege Genet	ARARI-Adet	Researcher	09-190123
2	Dr. Adugna Wakjira	EARO-Holeta	Researcher	370300
3	Ato Adebabay Mengest	BoARD-Amhara	Extension head	08-201508
4	Ato Yirgalem Asseged	ILRI-Bahar dar	R&Dev.Officer	09-763664
5	Mr. Philippe Lemperiere	IWMI	Project leader	01-463215
6	Ato. Mitiku Asfaw	ARARI-Adet	Researcher	09-190123
7	Ato. Ayehu Zeriun	OoA-Fogera	Office head	08-460027
8	Dr. Kassa Bayou	NAHRC-Sebeta	Researcher	01-380895
9	Dr. Menwelet Mousse	TAM-Agri Business	Consultant	09-641948
10	Dr.Simon Heck	World Fish Center	Researcher	20127456864

11	Ato. Melese Liyeh	OoA-Fogera	Deputy head	08-460064
12	Ato. Tilahun Gebey	SOS Sahel	Coordinator	09-761182
13	Dr. Zenebe Tadesse	EARO Sebeta-Fish Center	Manager	09-253163
14	Ato. Kahsay Berhe	ILRI	Sr. Research Ass.	463215
15	Ato. Abebe Misgina	ILRI	Sr. Research Ass.	463215

Annex 2.8- Administrative structure of the Fogera worda bureau of agriculture



Legend

1. **Extension & Home Science Desk**
2. **Animal & Fisheries Resource Development & Protection Desk**
3. **Crop Production Technology Promotion & Protection Desk**
4. **Natural Resources Development & Protection Desk**
5. **Environmental Protection, Land Utilization & Administration Desk**
6. **Cooperatives Promotion Desk**
7. **Water & Mining Desk**
8. **Rural Road Construction Desk**
9. **Rural Energy**
10. **DPPC & Food Security**
11. **Input supply And Credit Service**