



Indo - African Journal for Resource Management and Planning

(An International Peer Reviewed Research Journal)

ISSN 2347-1786. VOL 3. NO. 01 August 26, 2015

Article info

Received on March 15, 2015

Published on August 26, 2015

India

EFFECTS OF INTEGRATED WATERSHED MANAGEMENT PRACTICES ON THE FOOD SECURITY OF FARMERS IN WOREDA AHEFEROM

Trhas tsegay

Department of geography and Environment studies, Adigrat University, Ethiopia.

Abstract

In this paper both the qualitative and quantitative approach was used. For the quantitative approach variation, mean, standard deviation was applied and for the qualitative approaches the participatory tools such as focus group discussion, key informant interviews and observation was implemented.

The survey result revealed that the inhabitants of the treated area have benefited with an average gain in total production per tsimidi 4.34 quintals.

On average the inhabitant of the well treated area have gained a benefit of feeding their families for extra 0.76 months.

Key words - Integrated Watershed Management, Food Security

1. Introduction

Recent initiatives aimed at improving the food security situation of the poor-most notably the world food summit (WFS) –have been stimulated by the fact that although food availability for direct human consumption grew by 19% between 1960 and 1994-96 to 2 720 kcal/day (against an estimated minimum daily energy requirement of 2 150 kcal/day), availability is still very un even. In sub-Saharan Africa (SSA) calorific intake is still only 2 150 kcal/day compared to 2 050kcal/day thirty years earlier. In contrast, the average calorie consumption in South Asia rose from 2 000 kcal/day to 2 350 kcal/day in the same period. However, during the 1990s per capita growth of world agricultural production slowed. World cereal output, for example, fell from a peak of 342 kg per person in the mid 1980s to 311 kg per person in 1993-95, although it has since risen to 323 kg per person in 1996-98(FAO, 1991)

The results of such statistics are evident in the fact that in 1995-97, 820 million were estimated by the FOA to be undernourished, with 790 million living in developing countries. Although the number of undernourished people in developing countries actually fell by 40 million between 1980/82 and 1995/97, this improvement was also uneven, being attributable to a reduction of 100 million in 37 countries, whilst in the remaining countries the numbers increased by 60 million. In addition, the fall in absolute numbers is too low to achieve the world food security (WFS) goal of reducing the numbers of undernourished by half by 2015, since this would require an additional reduction of 20 million undernourished individuals each year until that date (FAO, 1999).

Ethiopia with an estimated per capita gross products (GDP) of \$160, is one of the lowest income earning countries, in the world and it is positioned 170th on the UN's Human development index list (World Bank, 2008). It is one of the 47 least developed countries (LDC) as well as one of the food deficient and low livelihood nations, on top of that Ethiopia is among the top 10 countries with lowest human development index. Out of the total population 73,918,505 (CSA, 2007) only 22% have access to safe drinking water, and only 15% use adequate sanitation facilities. Literacy rate stands at 49% (men); 34% (women); infant mortality rate of 77 per 1,000 live births (MoFED, 2009) and gross primary school enrolment rate was 62% (World Bank, 2008). These are some of the indicators that show the low level of economic status of the country.

HIV/AIDS pandemic is a potential challenge to economic development. The recurrent drought the country faces has been worsening health problems such as communicable diseases. Being heavily dependent on the subsistence mode of agricultural production, almost half of the total population of the country is living below poverty line and the country is suffering from both chronic and transitory food insecurity (NPA of SP, 2003 p. 2). This indicates that the major cause of poverty in Ethiopia is food insecurity, which is primarily the result of low agricultural productivity, drought and serious land degradation. Until food security is ensured, the majority of Ethiopians will remain locked in the poverty trap. 85% of households depend on agriculture, including about 10% herding livestock, all working on land in a sector unaccountably deprived of investment. Crops are therefore almost entirely rain fed in a country synonymous with the ravages of drought. Population growth of 2.6% (CSA, 2007) creates added pressure. Over 7 million people are classed as chronically food insecure, largely in the highlands where drought is most unrelenting. A further 10 million are identified as prone to drought (*see: <http://uk.oneworld.net/guides/EthiopiaFoodSecurity>*).

As a response, the Ethiopian government has designed the food security strategy of the country which targeted mainly to the chronically food insecure, moisture deficit and pastoral areas. A clear focus on environmental rehabilitation as a measure to reverse the level of degradation and also a source of income generation for food insecure households through a focus on biological measures marks a deviation from the 1996 strategy. Water harvesting and the introduction of high value crops, livestock and agro-forestry development further inform its content (FDRE, 2002).

The Tigray regional state is found in the Northern part of the country extending from 12°15' to 14°49' North latitude and 36°27' to 40°00' East longitude. The region has an area of 53,386 sq.km (BoFED, 2003). The population of the region is growing at 3.% every year and the current population census show that the region has a total population of 4,314,456 million (CSA 2007).

The economy of the region is mainly dependent on agriculture and out of the e total population 85 % is dependent on Agricultural sector. Almost 64.5 of the gross domestic product of the regional state derived from this sector (BoFED, 2003)

However, due to recurrent drought and the highly depleted natural resource base of the region is not getting enough production from this agricultural sector. As the agriculture of the region is rain fed under dry land environment, the rain pattern is also erratic and unreliable not only that but also the soil fertility is low, use of improved form technology is also low. Farming systems are integrated to markets because production hardly exceed subsistence requirement.

All these summed up led the region to be chronic food insecurity and then to very low livelihood status. In line with the country's strategy the region is following a strategy of "Agricultural Development Led industrialization", (ADLI) which focuses at conversation based agricultural production, small scale irrigation, and expansion of education and health facilities but with the presence of recurring drought the strategy is still facing problems instead achievements.

To counter face the challenge of food in security and come with a food secured future the regions government is implementing various food security programs under the umbrella of the national food security strategy. The governments of Tigray region and donor agencies are implementing different food security programs on the basis of watershed approach. The watersheds have been viewed as useful systems of planning and implementing natural resource and agricultural development of many centuries (Brooks and Eckman, 2000)

Central zone of Tigray regional state is one of the drought affected zones of Tigray region and of course one of the foods in secured zones and low level of livelihood condition, and Ahferom woreda where the study conducted is found in central zone of the region. The integrated watershed management practice is implemented in Tahtay DarekaTabia watershed with the objective of improving the livelihoods of the targeted households through natural resource conservation, increased agriculture productivity and production and improving the water supply of the targeted areas.

This study tries to investigate the effect of the integrated watershed management practice on the food security of the targeted households in the Tahtay Dareka watershed of the Ahferom Woreda.

2. Methods and Materials

2.1 Study area

Tahtay Dareka tabia is found at Ahferom woreda central zone of Tigray region at about 170km from the capital of the region Mekelle. It is located in the north west of the regional

Where every member has equal chance of being selected. This was presupposed to represent the entire population in the study area.

Table 1. spatial sample distribution of respondents by kushet

Sex	May-Hanber	Menabr	May-meret	Genadif	Total
Male	8	13	7	9	37
%	16	26	14	18	74
Female	2	4	1	6	13
%	3.12	8.32	2.08	12.48	26
Total	10	17	8	15	50
%	19	34	16	30	100

Source: own survey and computation 2015

Source of data and data collection

Data sources

To achieve intended objective of the study both primary and secondary sources of data were employed (used).

Primary data (information) related to socio-economic and demographic variable (data) was collected from primary sources using the methods specified under the methods of data collection here below.

Furthermore, secondary information had also collected from different offices such as Ahferom wereda agricultural and rural development office, REST Ahferom wereda branch, Tahtay Dareka farmers' Union relevant publication, documents, and reports was browsed so as to supplement the primary data.

Data collection tools

Different tools of primary data collection methods were used to collect the raw data from sources. Accordingly, structured and semi-structured questionnaire, household survey interview were administered. Qualitative primary information was acquired using focus group discussion (from selected respondents) as well as key informant interview and physical observation. This is because, questionnaire is easy to handle and to be filled by the respondents whereas focus group discussion is helpful to generate further information which is not listed in the questionnaire.

Data Analysis and presentation method

Prior of analyzing the data collected, checking completeness, editing and organizing were carried out to attain the stated objectives of the study. Having done this, the data which was collected was analyzed and presented using standard deviation, mean, and percentage as appropriate statistical package for the effect of the practice. On the other hand the qualitative information that was collected through FGD, key informant interview and a field observation had also analyzed. Furthermore analyzed data was also put in a tabular and statement form.

3. Results and Discussions

3.1 Grain inland Productivity per Tsimidi

The survey result revealed that the inhabitants of the treated area have benefited with an average gain in total production per tsimidi 4.34 quintals. The minimum and maximum production which was gained per tsimidi in this treated area was 2 and 7 quintals respectively. Whereas farmers within the untreated area have enjoyed an average gain of 3.47 quintals per tsimidi. This happened due to increase in the land productivity which resulted from intensive soil and water conservation measures which were constructed on cultivable(arable)land accompanied with moisture holding in the past few years. Other contributing factor for increase in production is that in the treated areas due to increase in water discharge and water flows the inhabitants are practicing irrigation. In figurative terms 33(66)% of the inhabitant of the treated area are using irrigation in some of their farm lands by constructing irrigation channels, diverting rivers and digging wells. Meanwhile 0% of the inhabitant of the untreated areas irrigate their land. The average production which is gained from the treated area exceeds the average production which is gained from the untreated one by 0.87 quintals/tsimidi(table 7)

Table 2 Land productivity

Area	Productivity Per Tsimidi in quintal				Mode	Total Mean range
	Minimum	Max	Average	Range		
Treated	2	7	4.34	5	5	4.34-3.47
Untreated	2	5	3.47	3	3	=0.87

Source: own survey and computation 2015

3.2 Number of Months A Household Can Feed His/ Her Family From own Production

The survey result disclosed that the inhabitants of the treated area have a gain of feeding their family for more months from own production. On average the inhabitant of the well treated area have gained a benefit of feeding their families for extra 0.76 months. This was able to achieve mainly from the increased land productivity. This shows that the integrated watershed management practice experienced in the study area showed significant gain for the inhabitant. Here both the treated and untreated area residents said that they are feeding themselves 3 times per day.

Table 8 average number of months a house hold can feed from own production

Area	Average production/ Tsimidi	Average Family size	Ave.Nu.of Mo. a Hh can feed his family From own production	Extra month
Treated	4.34	5.88	12.76 month	o.76
Untreated	3.47	5.68	11.06 month	-0.94

Source: own survey and computation 2015

33. Grain on household income

The survey result showed that the integrated watershed management practice which has done in the two kushets namely Menabr and Maymeret is creating another big opportunity in diversifying different income sources for the livelihoods of the inhabitants. Requested respondents have revealed that they are building assets and generating income from grass sells, fruit plants, animal fattening, beehive honey production, pole selling, milk and milk products better than the inhabitants of the untreated kushet dwellers. In figurative terms 17(34%) of the respondent of the treated area residents replay that they are gaining income from fruits, 10(20%) from milk and milk products, 10(20%) from animal fattening, 11(22%) from beehive honey production (table 8). This shows that the residents of the treated area are enjoying and have enjoyed an additional income from diversified income gained due to watershed treatment practice made in the area and able to subside their life well.

Table 9 sources of income other than crop production

Income sources	Treated		Untreated		Total
	Number	%	Number	%	
	0	0	18	72	18
Grass selling	1	4	1	4	2
Milk & milk products	4	16		0	4
Pole selling	0	0	3	12	3
Fruit plants	9	36		0	9
Animal fattening	5	20		0	5
Beehive honey production	6	24	3	12	9
Total	25	100	25	100	50

Source: own survey and computation 2015