

Production Expansion and Comparative Advantage of Upland Rice Production and its Effect on the Local Farming Systems: The Case of Guraferda District, Southwest Ethiopia

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Abstract

In Ethiopia, potential rice growing area is estimated to be about thirty million hectares and it remains as a minor crop due to various reasons. This study was conducted in Guraferda district to assess production expansion, comparative advantage of rice over other crops and its effect on local farming system. Two stage sampling technique was used to select four kebeles and 119 farmers for the study. Descriptive statistical tools like mean, standard deviations, frequency and percentage were used to analyze the data. The result showed that average area devoted for rice production per rice producer was 0.84, 0.87 and 1.04 hectares in 2012, 2013, and 2014, respectively. The average yield per rice producer was 26.9 qt, 26.67 qt and 28.5 qt in 2012, 2013, and 2014, respectively. The average quantity of paddy rice sold per smallholder producer was 17.7, 18.9, 7.51 quintals in 2012, 2013 and 2014, respectively. The cost benefit analysis of rice production shows that, despite rice production needs higher cost of production, it was profitable business than other crops grown in the district. A farmer got gross profit of 4150 ETB ha⁻¹ and this was higher than that of 2294.10 ETB ha⁻¹ of maize and 2431.83 ETB ha⁻¹ of sorghum. However, the experience of farmers in using improved technologies for rice production was weak as most of farmers still didn't use inorganic fertilizers and improved varieties. Therefore, the study suggests strong research extension farmer linkage to address the problems and improving the livelihood of farm households and the community in the district.

Keywords: Cost analysis; Farm households, Rice production; Rural livelihood

Introduction

Ethiopian economy is mainly based on agriculture from which nearly 46% of GDP, 83% of employment, and nearly 80% of foreign export earnings was obtained. country's agricultural sector is characterized by small-scale production and 90-95% of agricultural output comes from 14.2 small-scale subsistence household owning on average, about 0.89 ha of land [1].

Rice is produced worldwide and is the primary staple crop for more than half of the world's population and its farming is about 10,000 years old. It has fed more people for longer and extended time than has any other crop done. It is being produced in a wide range of locations and under a variety of climatic conditions on more than 144 million farms worldwide in. Rice is cultivated on every continent except Antarctica [2]. Although rice has been grown in many East and Southern African countries for more than 500 years, it has only been in the last two decades that consumption has increased

In Ethiopia, potential/suitable rice growing area is estimated to be about thirty million hectares and it remains as a minor crop in Ethiopian Agriculture [3]. According to Dawit [4], in Ethiopia, rice is predominantly grown in West central highlands of Amhara Region, North West lowland areas of Amhara and Benshangul Regions, Gambella regional state, South and South West Lowlands of SNNPR (Southern Nations Nationalities and Peoples Region), Somali Region and, South Western Highlands of Oromia Region.

Despite the country's immense potential for rice crop, its production, productivity and expansion has been challenged by lack of improved varieties, lack of recommended crop management practices, lack of pre and post-harvest management technologies and lack of awareness on its utilization [5,6]. As a result, its yield remains progressively low with average national productivity of 28 qt ha⁻¹

on the gaps of the crop the study was executed with the objectives of assessing rice production expansion, its on local farming systems and its comparative advantage over other competent and complementary crops.

Methodology

20,983 birrs, with highest income level is 60,000 ETB (Ethiopian Birr) and smallest one is 2000ETB (Table 2).

Variables	Minimum	Maximum	Mean	Std. Deviation
Age	26	74	46.9	10.35
Family Size	2	12	6.13	2.017
Annual Income (ETB)	2000	60000	20983.19	11942.89

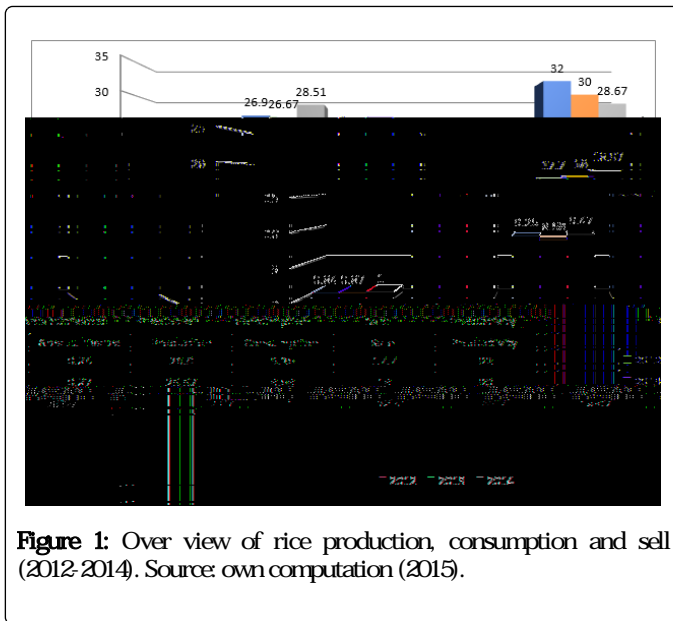


Figure 1: Over view of rice production, consumption and sell (2012-2014). Source: own computation (2015).

Production and productivity

Prior research showed that, volume of rice production in Ethiopia is also on moving with the national average productivity rise of 1.8 tons per hectare to 2.8 ton per hectare at on-farm level [11]. However, in this study revealed that, productivity have been declined for the last three years. As shown in the below, average rice productivity per hectare is 32 q/l, 30 q/l and 28.67 q/l in the years 2012, 2013 and 2014 year, respectively (Figure 1). According to farmers' response, the total amount of paddy rice has been declining time to time. Farmers pointed out the reason that causes the problem is disease locally known as Mich which caused the grains. In addition, shortage of rain falls at critical rice growing periods, lack of improved rice varieties and weak farmers soil and crop management practices.

To have increased productivity it is essential to adopt improved technologies like using disease resistant improved rice varieties, recommended rate and application time of fertilizer, improved crop management practices, frequent and extension support. But the experience of farmers with these factors was weak and that resulted in declining productivity for those consecutive years.

Consumption and market supply

Annually 9 qt ha⁻¹ rice was consumed at household level. Rice milling machine availability in district helped farmers to consume rice as one of major crop product. It was clear that rice production was in better market-oriented way than other crops and all producers used to supply the product to the market. average quantity of paddy sold per household was on average 17.7, 18.97 qt in 2012, 2013 and 2014, respectively. shows that it was higher than when it is compared with a report from Metema district where annual production, consumption and sale of 12.11, 8.53, 4.21 qt at household level, respectively [12].

Participant farmers mentioned that price for paddy have been improved for these consecutive years as compared to what had been before, but still they insist it should be improved well enough to be fair

price. Farmers sold their paddy rice to grain traders who were sitting in villages at kebele or district level without value addition activities, like selling milled rice not practiced. Since paddy rice is not that much by weevil like maize and sorghum in the area, most of farmers store rice for months and sale their product for local collectors or whole sellers in the time when they need money for expenses at prevailing price whether it was low or high.

Use of improved rice production technologies

Use of inorganic fertilizer: Agricultural production and fertilizer application are mutually related things which cannot be divorced. Fertilizer application harmonized with improved seed use and crop management is the key driver to agricultural production as it is critical in improving agricultural production and productivity through nutrient loss replacement on farmers' experience of farmers using/applying inorganic fertilizer for rice was weak as few farmers from the respondents used it and those farmers also used small amount of fertilizer that was seemingly below the recommended rate as its application rate varying from farmers to farmers. As shown in Table 5, only 31.9% of respondents applied inorganic fertilizer in 2014 production season. Some farmers face problems like lack knowledge of exact rate and time of application during using inorganic fertilizer. Some farmers told that they do not believe as there is an additional rice yield gained even as they apply inorganic fertilizer and due to this reason, they hesitate to use it. If this is the case, it might be to recover fertilizer cost from additional yield from the rice due to inorganic fertilizer application. In the area, most of rice farmers use local variety.

land preparation time weeds are cleared and burned before land was being ploughed. However, this could not reduce the invasion of rice by Mimosa weed because the weed grows from soil seed bank and not by a 2-4 D herbicide application, with which most farmers were familiar. Farmer's use of 2-4 D herbicide depends on the

Change/Effect	Yes (N=119)	Percent (N=119)	St. Deviation
Construction of better living house	97	81.5	0.390
Improved the amount of food consumed	106	89.1	0.313
Improved the clothing of family members	99	83.2	0.371
Improved the schooling of children	91	76.5	0.426
Increased the number of livestock	80	67.5	0.472
Increased number of farm tools	81	68.1	0.461
Increased the use of fertilizer on other crops	62	52.1	0.502
Increased the use of improved seed for other crops	49	41.2	0.490
Having TV/mobile/radio/tape	62	52.1	0.502
Having house in the town	18	15.1	0.360
Saving money in the bank/microfinance/on hand	65	54.6	0.500

Marketing cost	1244.88	488.688	873.14	500.422	535.025	268.6
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