

Trends in Production and Export of Gesho/Rhamnus Prinoids/ in Ethiopia

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Abstract

Gesho is a multipurpose crop as its all parts harvested and utilized. The study was conducted to analyze the trend of production and export of gesho in Ethiopia. Secondary data on production and export of gesho were used. The study identify the total hectare of land under gesho production and the total volume of production has increased with a compound growth rate of 3% and 4% respectively during the study period; while the productivity of the crop gesho has shown no change during the same period. Ethiopia exports on average 371,091 kg of gesho and gesho products to various countries and incurred birr 8,250,427. Israel, Burundi, Hong Kong, South Africa, Spain, Sudan, Sweden, Swaziland, Great Britain, United States, United Arab Emirates, Djibouti, Iceland, Albania, Canada, Greece, Germany, Italy, United Kingdom, Netherlands, Australia, Switherland, Norway and China are countries Ethiopian gesho and gesho products are destined during the study period. Israel and Sudan are the highest volume recipient countries for Ethiopian gesho and gesho products with the percentage share of 22 % and 72 % respectively. The total volume of export destined to Sudan during the study period is 5, 354, 567 kg and the total volume exported to the second large recipient country Israel has been 1,627,631 kg. Great Britain, Hong kong and Norway are the destination countries from which highest value/kg from gesho export is received. Ethiopia earn birr 322/kg and birr 304/kg from export of gesho to Great Britain and Hong kong respectively. The export value of 1kg of gesho per kg for export destined to largest recipient country of Ethiopian gesho export- Sudan is birr 24.

1. INTRODUCTION

Ethiopia being an agrarian economy is endowed with several plant species. Despite such natural endowment, much of the plant species remained underutilized. Rhamnus prionoides locally known as Geisho is one of the most underutilized plant species that have high social and economic importance in many rural and urban communities of Ethiopia. Rhamnus prinoides, (Gesho) belonging to the family Rhamnaceae is a shrub and can grow up to 8m high. It economically important shrub and is cultivated in a wide range of ecologies areas across the country (IBC, 2012). In Ethiopia, all parts of the plant Gesho are harvested and utilized for different purposes. According to (CSA, 2015/16) meher season 371,622 quintal of gesho has been produced and from these, a total of 56 quintal was utilized for household consumption while, 0.66 quintal, 41.64 quintal, 0.11 quintal, 0.01 quintal and 1.53 quintal was utilized for seed, sale, wages in kind, animal feed and others. Economically the leaf of gesho is used for consumption mainly as an additive in brewing local beverages i.e traditional home made alcoholic drinks including tella, katikala and tej. The leaves and steams of Gesho are indispensable ingredients in the making of these traditional fermented beverages (Susanne, V. 1997). Moreover it has got traditional medical values to relieve pain and as perennial crop ground cover, is important for soil protection against wind and water erosion (M.I Zuberi et.al, 2014;).

Furthermore studies revealed that, as a perennial crop it does not require high labor inputs every planting season, secondly it offers relatively high yield and incomes per unit area of land not only by itself but also in terms of suitability for inter cropping which allows for even more lucrative use of land especially in mountain areas (Susane, V. 1997)

Unlike many plant species that have social and economic importance, Geisho has been given little attention by research and development organizations in the country. This has led to less developed value chain and limited market opportunities. In this regard information available about geisho production and marketing is very scant which could be attributed to limited emphasis given to it. This study will therefore generally aim at generating information about Geisho production trend in the country and export value the country is generating from Geisho trade in the international market. The findings of the study will help planners and policy makers understand the importance of geisho in terms of export value the country is earning and overall trend in production, and justify the need to invest in Geisho research and development. The study has two operational objectives to achieve; 1) analyze the trend in production and yield and 2) analyze the trends in export volume and value of Gesho in the international market.

DATA

Time series data that cover a period of 22 years (1993 to 2014) were used. Data on production, area coverage and yield were obtained from FAOSTAT (2014) and the export volume and value of gesho were obtained from Revenue and Custom Authority of Ethiopia.

EMPIRICAL ANALYSIS

The analysis of this study is based on different econometric models and descriptive statistics. Semi-log trend function was fitted to the data following the procedure of Gujarati to find out the trend and estimate the growth rate of production, area and yield and also the volume and value of the export of gesho in Ethiopia.

If y_t denotes the observation (e.g. agricultural production, productivity, or area) at time t and r is the compound growth rate, model employed for estimating r is based on

$$y_t = y_0 (1 + r)^t \dots \dots \dots \text{eq1}$$

The usual practice is to assume a multiplicative error-term ϵ so that the model may be linearized by means of logarithmic transformation,

$$\ln y_t = a + bt + \epsilon \dots \dots \dots \text{eq2}$$

where, $a = \ln(y_0)$, and $b = \ln(1 + r)$. eq.2 is then fitted to data using “method of least squares” and goodness of fit is assessed by the coefficient of determination R^2 . Finally, the compound growth rate is estimated by,

$$\hat{r} = \exp(\hat{b}) - 1 \dots \dots \dots \text{eq3}$$

2. RESULTS AND DISCUSSION

2.1. Trends in production, area and yield

The total area of land under Gesho production and total volume of production has been growing over years. It is found that the major source of increase in the total production of gesho has been totally resulted from increase in area of land allocated for its production, implying that the contribution of productivity to total production was null (Table 2 and 3). This is attributed to lack of productivity enhancing technologies as Gesho has received limited or no attention by the country’s research system.

The total area of land under production has been reached 28,386 ha in 2014 from 14,500 ha during 1993 (Table 1). Production showed an increase from 15,000 tons in 1993 to 32,215 tons in 2014. Highest production registered during the year 2007 which was about 32,361 tons. On the other hand, for the first three consecutive years the crop was not showing any change in quantity produced. But a positive annual percentage change has been registered in the production of the crop Gesho except during 2002, 2005, 2008, 2010 and 2012. And also a positive annual percentage change has been registered in area, except in 1994, 2001 and 2008 to 2010.

But the productivity of Gesho does not show any significant change from year to year, even though the area as well as the production of the crop increase significantly with a compounded growth rate of 3% and 4% respectively (Table 3). Among the possible explanations could be lack of important technologies that assist to develop the production and productivity of Gesho. The growth in production comes from the increase in area only. A unit increase in area brings about a 1.344 ton increase in production (Table 2). The annual percentage change in yield was zero throughout the study period.

Table 1. Annual percentage change in area, production and yield

year	Total area in ha	Annual percentage change in area	Total production in tone	Annual percentage change in production	Yield (tone/ha)	Annual percentage change in yield
1993	14,500		15,000		1.0	
1994	14,341	-1	15,000	0	1.0	0
1995	14,500	1	15,000	0	1.0	0
1996	15,000	3	16,000	7	1.1	0
1997	16,000	7	17,000	6	1.1	0
1998	18,000	13	19,000	12	1.1	0
1999	19,000	6	20,000	5	1.1	0
2000	21,000	11	23,000	15	1.1	0
2001	18,448	-12	24,651	7	1.3	0
2002	20,000	8	24,000	-3	1.2	0
2003	20,792	4	24,920	4	1.2	0
2004	21,943	6	26,050	5	1.2	0
2005	22,891	4	22,780	-13	1.0	0
2006	23,778	4	24,053	6	1.0	0
2007	25,214	6	32,361	35	1.3	0
2008	24,409	-3	30,281	-6	1.2	0
2009	23,998	-2	30,938	2	1.3	0
2010	21,669	-10	28,086	-9	1.3	0
2011	22,564	4	28,901	3	1.3	0
2012	22,945	2	21,792	-25	0.9	0
2013	24,726	8	30,588	40	1.2	0
2014	28,386	15	32,271	6	1.1	0

Authors calculation based on data from FAOSTAT

Both total production and area allocated for the production of Gesho has shown increasing trend during the last 20 years (Figure 1). Increase trend in total volume of production indicate growing importance of Gesho in the economy as increasing amount of land has been shifted to the production of Geisho. Land committed for the production of gesho has steady growth unlike total volume of production which has exhibited significant fluctuations over years.

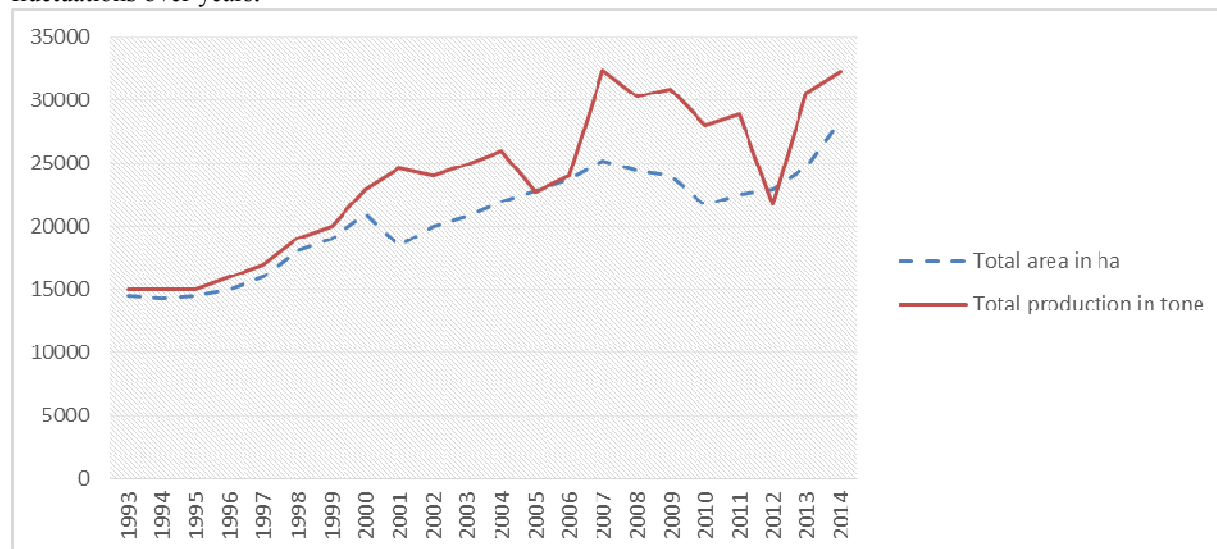


Fig. 1. Trend in Land area coverage and total volume of Gesho Production

REGRESSION ANALYSIS

The simple linear regression functions were fitted for estimating the response of production of gesho due to the change of its respective area. And productions of gesho were significantly increased. The coefficient of production on area was 1.344 (Table 2).

Table 2. Regression analysis: to test the dependency of production on area of gesho

Constant Value	Regression coefficient	t-value	P(T<=t) two tail
-4024	1.344	10.169	0.000

GROWTH RATE

Table 3 shows that the area and production of Gesho have a significant (significant at 1%) positive trends of 3 percent and 4 percent per annum over the study period respectively. while yield does not show a significant change or trends.

Table 3. Growth rate in area, production and yield of gesho

	Area	Production	Yield
CAGR	3*	4*	-

Trends in export volume and value of Gesho

Ethiopia has been exporting some quantities of Gesho to various parts of the world since 1997. Fig 3. shows exports of Gesho from 1997 to 2016. The period under analysis opened with low volumes of gesho exports and this followed by substantial increase in volume of gesho exports. The last 9 years trend in the volume of Gesho and Gesho products has been increasing steadily. In 1997, the total quantity of Gesho exported from Ethiopia to Israel and Great Britain was 12,270 kg. From these 12,205 kg was exported to Israel and incurred about 172,224 birr. And after some fluctuations it increased to 238,762 kg during 2001 and reached its climax 962,418 kg in 2015. Ethiopia is exporting Gesho cones, ground, powdered, Gesho sticks, fresh and dried Gesho leaves. And this indicates that, value added products of Gesho has been exported to different countries in the world, so small micro enterprises and others interested body can engage in the production as well as processing of Gesho.

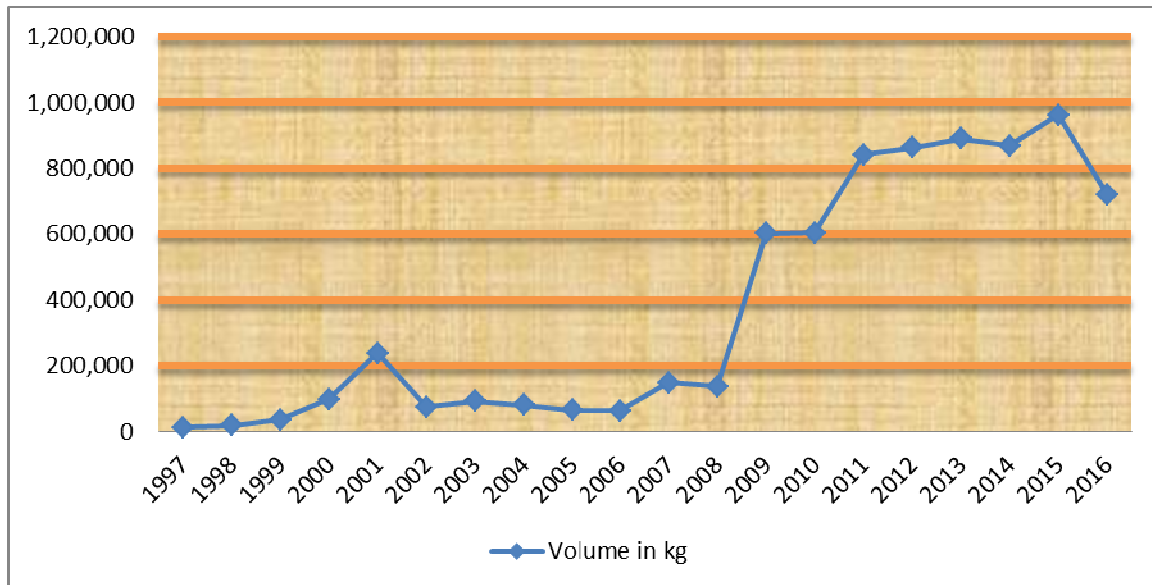


Fig2. Trends in total volume of Gesho

In terms of value, the period under analysis opened with low values of gesho exports and this was followed by substantial increase in value of gesho exports. The export value was 173,032 birr in 1997 and reached its climax during 2014 which was 25,658,382 birr (fig 3). The period under review closed with relatively high export values of Gesho. The trend in value of Gesho export was generally increasing steadily. And this shows that Gesho was becoming an important crop in the international market, so Ethiopia can get an advantage from the crop.

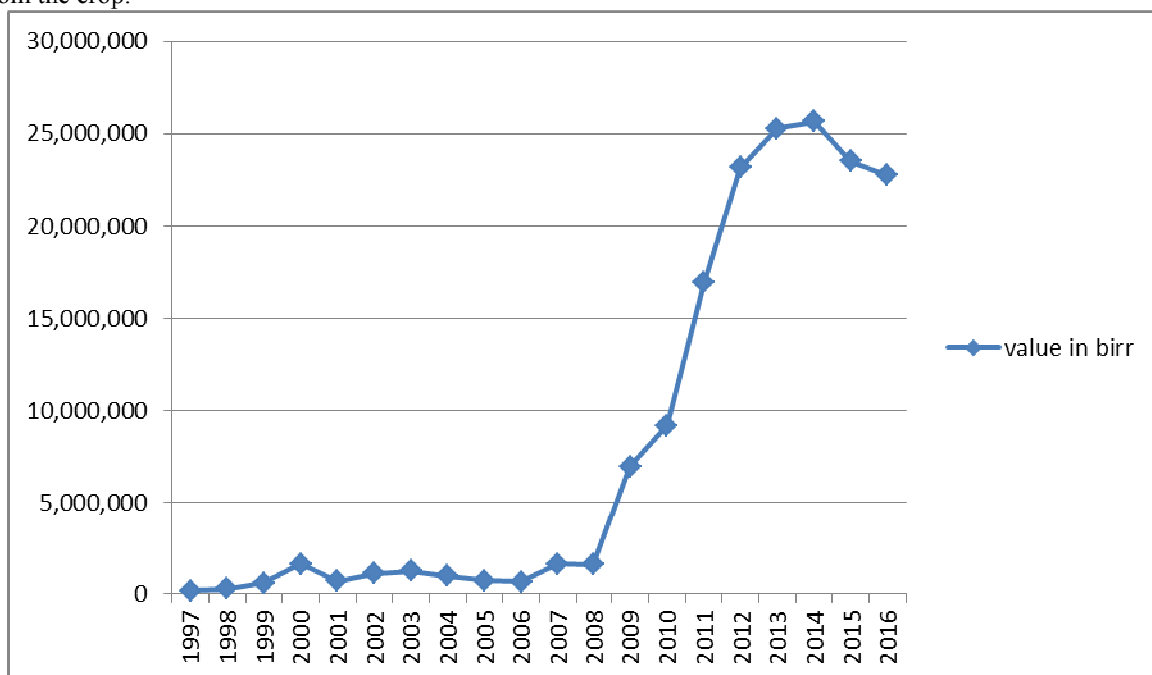


Fig 3 Trends in total export value of Gesho

Trend in Value-to-volume ratio (VVR) for exported gesho and gesho products

The trend in the export value-to-volume ratio (VVR) is an indicator of whether the product is either gaining or losing value from movement in world prices. It gives an indication of the extent to which the product can be considered a relatively high-value export. In other words, VVR is the amount of local currency earned from a kilogram of export item over time and calculated by dividing total value in birr by total volume in kilogram of the export item.

From fig2 . we can reveal that, the VVR for exported Ethiopian Gesho has shown increasing trend during the study period. As a result of this the volume of the exported Gesho and Gesho products has been increasing steadily. Therefore the country can be benefited with the crop in the international market.

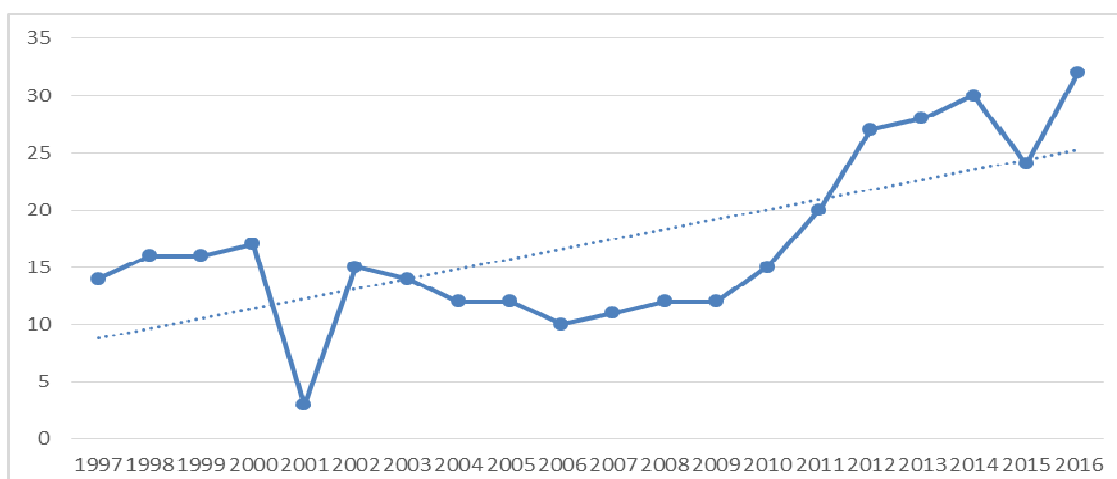


Fig. 2. Trend in VVR

On the other hand, from Table 4 we can see that the average VVR for exported Ethiopian Gesho during the study period has been birr 17/kg. The highest VVR in exporting Gesho from Ethiopia was birr 32/kg during 2016, whereas the least VVR of birr 3/kg was registered during 2001.

Table 4: Trends in Value to Volume ratio (Birr/kg)

Year	Total Volume	Total Value	VVR
1997	12,270	173,032	14
1998	19,118	301,259	16
1999	36,455	596,018	16
2000	97,912	1,654,094	17
2001	238,762	712,864	3
2002	75,455	1,126,911	15
2003	91,574	1,277,576	14
2004	80,383	992,043	12
2005	64,955	752,485	12
2006	63,938	666,707	10
2007	149,236	1,628,558	11
2008	137,553	1,627,335	12
2009	603,011	6,991,325	12
2010	604,265	9,210,800	15
2011	841,884	16,947,084	20
2012	863,510	23,155,587	27
2013	890,838	25,264,687	28
2014	867,854	25,658,382	30
2015	962,418	23,516,646	24
2016	720,424	22,755,137	32
Average	371,091	8,250,427	17

Authors calculation based on data from FDRE Revenue and Customs Authority

Major Export Destinations of Ethiopian Gesho

From table 5. we can reveal that, Israel, Burundi, Hong Kong, South Africa, Spain, Sudan, Sweden, Swaziland, Great Britain, United States, United Arab Emirates, Djibouti, Iceland, Albania, Canada, Greece, Germany, Italy, United Kingdom, Netherlands, Australia, Switherland, Norway and China are countries Ethiopian gesho and gesho products are destined during the study period. Israel and Sudan was the highest volume recipient countries for Ethiopian Gesho and Gesho products with the percentage share of 22 % and 72 % respectively. The total volume of export destined to Sudan during the study period was 5, 354, 567 kg and the total volume exported to the second large recipient country Israel has been 1,627,631 kg.

Burundi, Great Britain, Hong kong, Norway and Albania were the destination countries from which highest value/kg from Gesho export is received. Ethiopia earn birr 442/kg, birr 322/kg, birr 304/kg, birr 187/kg and birr 131/kg from export of Gesho to Burundi, Great Britain, Hongkong, Norway and Albania respectively. While, the rest of major export destinations exhibited lower VVR. The export value of 1kg of gesho per kg for export destined to largest recipient country of Ethiopian gesho export- Sudan was birr 24 and that of Israel was birr 20. This implies that we are exporting much of our Gesho to countries with lowest VVR. So we are losing our advantage in the international market.

Table 5. Export Destinations of Ethiopian Gesho

Destinations	Volume	Value	VVR
Albania	100	13,084	131
Australia	2,259	95,137	42
Burundi	30	13,266	442
Canada	12,220	290,177	24
China	10	500	50
Djibouti	236,200	606,809	3
Germany	926	56,889	61
Great Britain	165	53,100	322
Greece	100	1,735	17
Hong kong	50	15,217	304
Iceland	5,590	119,306	21
Israel	1,627,631	32,338,702	20
Italy	1000	13,061	13
Netherlands	32	1,927	60
Norway	369	68,971	187
Soth Africa	15	984	66
Spain	50	1,282	26
Sudan	5,354,567	126,756,889	24
Swaziland	20	429	21
sweden	153	4,717	31
Switzerland	126	3520	28
UAE	65,985	985,190	15
UK	3,743	101,310	27
United states	110,516	3,515,163	32

Authors calculation based on FDRE Revenue and customs Authority

6. CONCLUSION AND RECOMMENDATION

The area and production of gesho in Ethiopia shows a significant compounded growth rate of 3 percent and 4 percent respectively while, the productivity does not show any significant change from year to year. The annual percentage change of the yield of the crop gesho in Ethiopia was almost zero during the study period. On the other hand, the export volume of gesho from Ethiopia during the study period was about 371,091 kg on average. And also, the average value Ethiopia incurred in exporting gesho during the study period was 8,250,427 birr. If we take the look at the trends in value to volume ratio of Ethiopian gesho during the study period, it exhibited its maximum VVR of birr 32/kg during 2016, whereas a minimum VVR of birr 3/kg in 2001. Burundi was the destination country from which highest value/kg (birr 442/kg) from Gesho export was received. In terms of volume, Israel and Sudan were the highest volume recipient countries for Ethiopian gesho and gesho products with the percentage share of 22 % (1,627,631 kg) and 72 % (5,354,567 kg) respectively. But the export value of 1kg of gesho per kg for export destined to largest recipient country of Ethiopian gesho export- Sudan was birr 24 and that of Israel was birr 20 which indicates us that, we are losing the advantage in the international market.

7. References

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