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# Mung Bean [*Vigna radiata* L.] Production Vis-Avis Market Potential in Ethiopia: A Review

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**ABSTRACT**

Due to its high protein (26%), carbohydrate (62%), mung bean is getting prominent attention globally. It is a rich source of nutrients and is considered a healthy food. The crop constitutes an important place in vegetarian diets. Globally, 5.3 million tons of mung bean is harvested from 7.3 million hectares of land. India and Myanmar are the major suppliers of this product to the global market each exporting 30%. The world's average mung bean productivity is about 1.2 ton $ha^{-1}$. Being the homeland of several crops, Ethiopia ranks 13th in the world among the pulse crop-producing countries. Mung bean is ranked 6th with 42 thousand ha of land covered by the crop. Looking at the national average productivity of mung bean in Ethiopia is about 0.9 ton $ha^{-1}$. This is 20% lower than the world average productivity (1.2 ton $ha^{-1}$) which could be attributed to various factors that impact the growth, agronomic and yield performance of the crop on the smallholder farming scheme. Ethiopian agricultural production enhancement and export augment strategy delineates mung bean strategically important crop to the nation`s development in the sector. Mung bean is among the third agricultural export commodities following coffee and oilseeds playing a pronounced role in the economic development of the nation. Since 2014, mung bean has become the sixth export commodity in Ethiopia. Within 15 days of export trade, Ethiopia has earned 12.3 million USD. Therefore, the objective of this study is to review scientific facts on the production and marketing potentials of mung bean in Ethiopia.

**KEYWORDS**

Mung bean, pulses, Ethiopia, market potential, climate change, high protein



## INTRODUCTION

Mung bean (*Vigna radiata* L.) is one of the most important legume crops which belongs to Fabaceae family and subfamily papilionaceae with diploid chromosome number 2n = 2x = 22 and it grows in the tropical and subtropical regions of the world[1]. Three subgroups of *Vigna radiate* exist thus far where only one is cultivated (*Vigna radiata* subsp. *radiata*) and the rest two are wild (*Vigna radiata* subsp. *sublobata* and *Vigna radiata* subsp. *glabara*). The mung bean (*Vigna radiata* var. *radiata*) has its origin in India[1]. Mung bean is widely cultivated for human food and as a livestock feed and even sometimes it is grown as green live manure for enriching agricultural soils with essential nutrients, retaining soil moisture and organic matter. It is estimated that a mung bean seed contains on average 26% protein, 62%

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carbohydrate, 1.4% fiber, vitamins, minerals, calcium and phosphorous[2]. Moreover, mung bean is a rich source of nutrients and is considered a healthy food. The crop constitutes an important place in vegetarian diets by which the seeds are good sources of higher levels of folate and Iron than most other legume crops. Mung bean seeds are a good source of dietary protein and contain higher levels of folate and iron than most other legumes[3].

The world's mung bean production coverage is worth around 7.3 million ha and an average of 5.3 million tons of mung bean is harvested from it. India and Myanmar are the major suppliers of this product to the global market each exporting 30% whereas, China contributes 16% and Indonesia 5% to the global mung bean market. The world's average mung bean productivity is about 1.2 ton $ha^{-1}$ [4].

Ethiopia is the homeland of several crops ranking 13th in the world among pulse-producing countries. With its annual area coverage and volume of production, mung bean is ranked 6th with 41,633.20 ha of land producing 514,22.74 tons in the main cropping season per annum with an average productivity of 1.235 ton $ha^{-1}$[5]. Looking at the national average productivity of mung bean in Ethiopia, is about 0.9 ton $ha^{-1}$ and this is 20% lower than the world average productivity (1.2 ton $ha^{-1}$)[6]. The 20% lower productivity of mung bean recorded in Ethiopia could be attributed to various factors that impact the growth, agronomic and yield performance of the crop on the smallholder farming scheme.

Ethiopian agricultural production enhancement and export augment strategy delineate pulses including mung bean as strategically important crops to the nation's development in the agriculture sector. Because pulses including mung bean are the third agricultural export commodity after coffee and oilseeds and play a pronounced role in the economic development of the country[7].

Since 2014, mung bean has become the sixth export commodity to be traded on the Ethiopian commodity exchange. Within 15 days of export trade from 02/01/2020 to 16/01/2020, from mung bean only, Ethiopia has earned 12, 229, 321.06 USD with Indonesia, Vietnam and Portugal being the top importing countries[8]. Therefore, the main objectives of this study were:

- To review and compile scientific facts on the growth, agronomic and production requirements of mung bean
- To review scientific and operational facts on the analysis of the domestic and export market potential of mung bean in Ethiopia
- Draw prospective analysis on the crop as a tool for devising roadmaps to achieving the ambitious sustainable development goals of the nation

**Factors that affect the growth, agronomic and yield performance of mung bean**

**Temperature (air temp; soil temp; fallow temp) and inoculation:** The average global temperature rose by 1°C since1880 of which 2/3 of this increment in temperature is noted during the last 40 years (World of Change: Global Temperatures). This 1°C increase in temperature is a highly pronounced rise as it demands a huge amount of solar energy to heat the ocean and terrestrial. This increase in average temperature has a prominent capacity to affect crop germination and productivity as this ultimate global warming pronouncedly affects vegetation around the world[9].

Mung beans are capable of coping with short term high temperature shocks due to the exogenous Glutathione (GSH) they exhibit. This Glutathione (GSH) is an antioxidant property of a cell that helps prevent damage to the important cellular components mostly impacted to the cellular components by the reactive oxygen species (ROS) such as free radicals, peroxide and heavy metals[10]. Practically, an increase in mean temperature enhances plant growth, yield and flowering in mung beans. However, if temperatures are too high (>30°C) the flowering can be delayed and significant flower abortions could be recorded[11].

Inoculation of mung bean roots at different temperatures after a certain period of growth evidently demonstrates significant differences in growth traits (Table 1). Looking at the experimental result by Haugen and Smith[12] as indicated in Table 1, the infectivity of mycorrhiza itself was highly influenced by temperature with the least infectivity recorded at 22°C and the highest at 30°C. Moreover, this result tells us that both 22 and 38°C were not ideal temperatures to create infectivity of mung bean roots for nodulation but, 30°C is superior. While coming across the same statistical result in Table 1, this temperature beyond affecting the infectivity has also affected the growth parameters of mung bean. It has indirectly affected the shoot's dry weight due to its direct effect on root growth and biomass. The shoot dry weight has shown an increase along the rise in temperature except 38°C and this is entirely because of the direct effect of temperature on the infectivity of the mycorrhiza on the mung bean roots and further growth of roots which increases the apparent root fresh weight and dry weight. As the root growth proportionally promotes the shoot growth, the mung bean shoot fresh weight attained higher shoot growth.

Another study was carried out by imposing mung beans to a high temperature (36°C) during pre-flowering, flowering and pod-filling stages to see its effect on the photosynthetic rate, leaf conductance, transpiration rate, pod weight and yield has depicted that high temperature abridged the photosynthetic rate, leaf conductance and transpiration rate with the indistinguishable values as can be noted from Table 2. When imposed to a high temperature (36°C) at the pre-flowering stage, the mung beans showed a lesser leaf conductance, (0.25 (mol $H_2O$ $m^{-2}s^{-1}$)) over the others[13].

The imposition of mung bean to high temperature did not affect the transpiration rate though pod weight decreased across all the development stages at the high temperature compared to the ambient temperature.

Compared to the high temperature, the ambient temperature demonstrated the highest yield. Across all development stages (pre-flowering, flowering and grain-filling stages), the yield was lower than the ambient and appears identical. Imposing the mung bean to high temperatures (36°C) across all the developmental stages has also affected the seed yield. This could be attributed to the abortion and shedding of flowers due to hormonal changes that take place in response to the high temperature. The high temperature also causes failure of the fertilization process and this could be again due to the indehiscence of anthers and non-receptivity of stigma and ovary of the flowers at the high temperature.

Table 1: Effect of temperature on the growth of mung bean and infectivity of mycorrhizia

| Plant age (weeks) | 2 | | | | | | 6 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Soil temperature (°C) | 22 | | 30 | | 38 | | 22 | | 30 | | 38 | |
| Inoculum | + | - | + | - | + | - | + | - | + | - | + | - |
| Infection (%) | 16.4 | ... | 55.9 | ... | 23.2 | ... | 62.4 | ... | 65.2 | ... | 60.5 | ... |
| Standard deviation | 3.1 | ... | 4.3 | ... | 3.8 | ... | 3.7 | ... | 5.6 | ... | 5.5 | ... |
| Shoot dry weight(g) | 0.14 | 0.14 | 0.21 | 0.14 | 0.18 | 0.15 | 0.79 | 0.63 | 1.17 | 0.45 | 0.83 | 0.52 |
| Standard deviation | 0.02 | 0.01 | 0.02 | 0.04 | 0.02 | 0.03 | 0.12 | 0.21 | 0.34 | 0.11 | 0.17 | 0.11 |
| Root dry weight(g) | 1.74 | 1.56 | 1.87 | 1.41 | 1.43 | 0.93 | ... | ... | ... | ... | ... | ... |
| Standard deviation | 0.24 | 0.11 | 0.24 | 0.26 | 0.29 | 0.31 | ... | ... | ... | ... | ... | ... |

Haugen and Smith[12]

Table 2: Effect of temperature on the photosynthetic rate, leaf conductance and transpiration rate of mung bean

| Temperature imposed | Photosynthetic rate (µmol $CO_2$ $m^{-2}s^{-1}$) | Leaf conductance (mol $H_2O$ $m^{-2}s^{-1}$) | Transpiration rate (mol $H_2Om^{-2}s^{-1}$) | Pod weight (g)/plant | Yield (g)/plant |
|---|---|---|---|---|---|
| Ambient | $26.21^{a}$ | $0.25^{a}$ | 3.72 | | |
| 36°C at pre-flowering stage | $23.99^{b}$ | $0.24^{b}$ | 3.71 | $13.45^{a}$ | $11.17^{a}$ |
| 36°C at flowering stage | $23.85^{b}$ | $0.25^{a}$ | 3.70 | $10.58^{b}$ | $8.31^{b}$ |
| 36°C at pod filling stage | $23.96^{b}$ | $0.25^{a}$ | 3.71 | $10.59^{b}$ | $8.34^{b}$ |
| Coefficient of variation (%) | 3.04 | 4.63 | 3.48 | $10.87^{b}$ | $8.47^{b}$ |

Values with the same letter (s) in a column do not differ significantly at 5% level as per Duncan's Multiple Range Test by Islam[13]

Table 3: Effect of intra-row spacing and/or time of weeding on plant height of mung bean

| | Plant height (cm) at different days after sowing | | | | |
|---|---|---|---|---|---|
| Treatments | 15 DAS | 30 DAS | 45 DAS | 60 DAS | At harvest |
| **Effect of intra-row spacing** | | | | | |
| S1 | 6.9 | 28.84 | 48.02 | 51.45 | 54.2 |
| S2 | 7.89 | 28.04 | 46.94 | 49.24 | 52.96 |
| S3 | 8.75 | 2523 | 45.5 | 47.21 | 51.44 |
| S4 | 10.07 | 26.56 | 44.65 | 46.35 | 50.42 |
| $LSD_{0.05}$ | 0.29 | 0.302 | 0.75 | 0.713 | 0.845 |
| **Effect of weeding** | | | | | |
| W0 | 8.31 | 23.37 | 41.89 | 42.6 | 47.66 |
| W1 | 8.62 | 28.31 | 44.77 | 46.34 | 50.08 |
| W2 | 8.55 | 28.25 | 47.93 | 50.33 | 53.77 |
| W3 | 8.5 | 28.83 | 50.53 | 54.98 | 57.5 |
| Least significant difference at 5 (%) | ns | 0.325 | 0.714 | 0.642 | 0.733 |
| Coefficient of variation (%) | 8.75 | 9.14 | 7.36 | 10.47 | 9.36 |

ns: Non significant, Pulok *et al.*[14]

Therefore, high temperature during all the development stages affects the growth and productivity potential of mung beans.

**Spacing and weeding frequency:** When the plant height of mung bean is measured on different days during the entire growth period after sowing (30, 45 and 60 days after sowing) and at harvest over varied spacing, it was significantly different. A statistically significant difference was noted in terms of plant height during the entire growth stages of mung bean in response to the spacing between plants. The statistical result of research conducted by Pulok *et al.*[14] shows that mung beans that are densely populated (closely spaced) (28.84, 48.02, 51.45 and 54.20 cm, respectively) would result in the tallest mung bean plant. This same experiment elucidates that low-density planting during early stages of growth reveals the tallest plants whereas; during later stages of growth and at harvest, the low-density planting reveals mung bean plants of the shortest height.

The plant height was significantly influenced by the weeding frequency across the entire growth stages of mung beans except 15 days after sowing (Table 3). According to Pulok *et al.*[14], increasing the number of weeding has increased the plant height across the growth stages including at harvest. Mung bean plants with the tallest height (28.83, 50.53, 54.98 and 57.50 cm, respectively) were recorded at 3 times the weeding frequency (W3).

Whereas; the shortest mung bean plant was recorded at no weeding (W0). In the rest of the weeding treatments (W1 and W2) the mung bean plant height was intermediate.

**Nutrition:** As mung bean is a legume crop that forms a symbiosis with the rhizobia bacteria, it is able to fix atmospheric nitrogen and make it available to itself and even add the surplus to the rhizosphere it is growing at. Except for the minimum amount of nitrogenous fertilizers usually applied as a starter or initial dose, mung bean is less dependent on nitrogenous fertilizer. The initial dosing of nitrogenous fertilizer in mung bean farming is helpful in increasing the growth and yield of the crop. Nutrition is the most limiting factor in the mung bean growth and productivity with the consideration of the surplus nitrogen amount it can fix, the crop demands the other primary and secondary essential nutrients to invariably complete its life cycle[15]. These essential nutrients can be obtained from different sources. Earlier research experiences unveil that the major sources of these nutrients are chemical fertilizers, farm yard manures and nitrogen fixed by the symbiotic relationship with rhizobium. As indicated in Table 4, an experiment carried out by Meena *et al.*[16], explains that the application of NPK at the rate and ratio of $N_{20}$, $P_{40}$ and $K_{40}$ kg $ha^{-1}$ and farm yard manure of 10 ton $ha^{-1}$ along with *Rhizobium* at the rate of 200g/10 kg

Table 4: Effect of different levels of NPK, FYM and *Rhizobium* on growth and yield of mung bean (*Vigna radiata* L.)

| Treatment combination | Plant height (cm) | Number of leaves $plant^{-1}$ | Number of branches $plant^{-1}$ | Number of clusters $plant^{-1}$ | Number of pods $plant^{-1}$ | Seed yield (q $ha^{-1}$) |
|---|---|---|---|---|---|---|
| T0 (L0F0R0) | 45.33 | 27.00 | 2.00 | 3.89 | 11.67 | 08.68 |
| T1 (L0F1R1) | 46.00 | 28.00 | 2.33 | 4.55 | 14.89 | 09.15 |
| T2 (L0F2R1) | 46.66 | 28.00 | 2.33 | 5.00 | 16.22 | 09.62 |
| T3 (L1F0R1) | 45.66 | 28.00 | 3.00 | 6.00 | 19.55 | 09.95 |
| T4 (L1F1R1) | 47.66 | 29.00 | 3.55 | 7.11 | 23.33 | 10.38 |
| T5 (L1F2R1) | 48.00 | 29.00 | 3.66 | 7.33 | 24.22 | 10.72 |
| T6 (L2F0R1) | 48.66 | 31.00 | 3.77 | 7.55 | 27.77 | 11.13 |
| T7 (L2F1R1) | 49.66 | 32.00 | 4.33 | 8.66 | 31.78 | 11.60 |
| T8 (L2F2R1) | 50.66 | 33.00 | 4.66 | 9.33 | 37.33 | 12.10 |
| SEM± | 0.000001 | 00.27 | 0.07 | 0.19 | 00.80 | 00.04 |
| Least significant difference at 5% | 0.000002 | 00.58 | 0.15 | 0.40 | 01.69 | 00.08 |

L refers to the NPK levels, F: Farm yard manure levels, R: Rhizobia levels, Meena *et al.*[16]

Table 5: Main effects of bio-slurry and nitrogen fertilizer sources on yield parameters of mung bean

| | Yield parameters | |
|---|---|---|
| Treatments | Number of pods $plant^{-1}$ | Harvest index (%) |
| **Rate of BS (%)** | | |
| 0 | $17.5^{b}$ | $30.8^{b}$ |
| 50 | $20.6^{ab}$ | $40.0^{a}$ |
| 100 | $22.9^{a}$ | $26.6^{bc}$ |
| 150 | $20.5^{ab}$ | $21.9^{c}$ |
| **N fertilizer sources** | | |
| 0 | $20.1^{a}$ | $30.3^{a}$ |
| 23 | $19.8^{a}$ | $29.7^{a}$ |
| *Rhizobium* | $20.9^{a}$ | $31.9^{a}$ |
| 23+*Rhizobium* | $20.7^{a}$ | $27.5^{a}$ |
| Coefficient variation (%) | 25.8 | 23.5 |
| Least significant difference (5%) | 3.7 | 5.0 |

Values with the same letter(s) in a column do not differ significantly at 5% level as per Duncan's Multiple Range Test, Tadewos *et al.*[17]

Mung bean seed was found to be a superior in enhancing growth traits such as; plant height (50.66 cm), number of leaves per plant[1] (33.00), number of branches per plant (4.66), number clusters per plant (9.33), number of pods per plant (37.33) and total seed yield in q $ha^{-1}$ (12.10). Studies conducted on the effects of bio-slurry and nitrogen fertilizer application on the phenology, growth and yield traits of mung bean demonstrate that compared to the other treatments, the sole application of bio-slurry has significantly boosted the harvest index. Whereas the sole application of nitrogen fertilizer and combined application of bio-slurry and nitrogen fertilizer had no significant improvements on the harvest index. Moreover, the maximum harvest index was recorded with the application of 50% bio-slurry (Table 5). The study by these authors confirms that bio-slurry has the ability to provide both macro and micronutrients that are essential to the growth, development and ultimate economic yield of the crop. The bio-slurry further boosts the physiological efficiency of mung bean to convert the maximum proportion of dry matter into the final economic yield.

**Global market demand to mung bean:** Of the total 5.3 million tons marketed annually, 90% of mung bean supplied to the global market is produced in Southeast Asia. India is both the largest producer and consumer of mung bean in the world contributing almost 30% to the global market. Myanmar also exports 30% to the global market followed by China (16%) and Indonesia 5%. Though improvements in the development of climate change resilient varieties of mung bean are being carried out, the global export value for mung bean dropped in 2019 with a 45.6% drop since 2015 and a 26.3% drop since 2018[4]. The most interesting market of mung beans comes from European countries because of the gentle diet

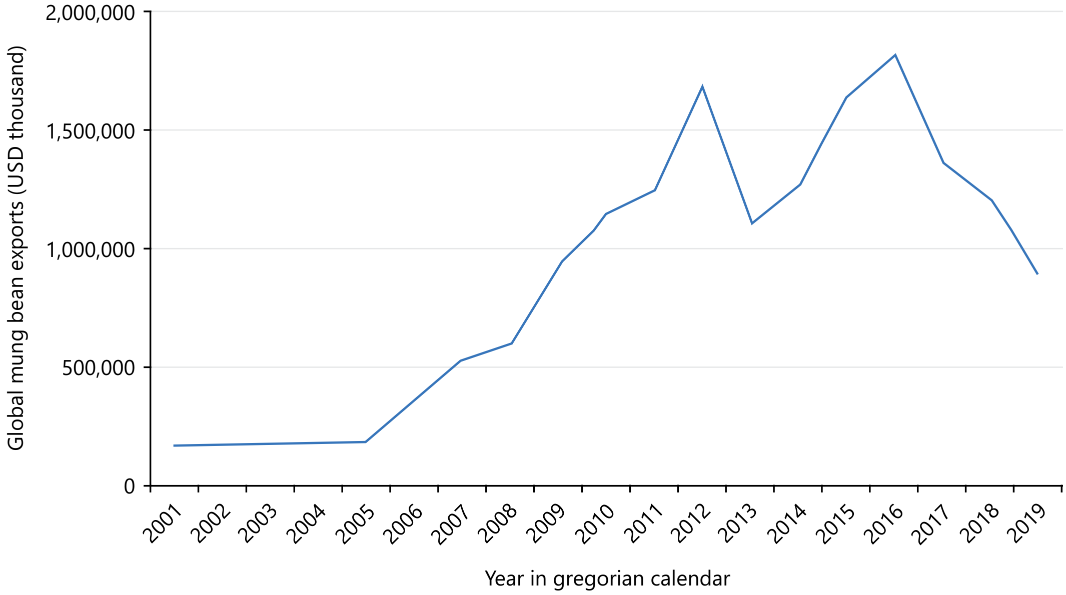


Fig. 1: Global mung bean exports by year (in USD thousand) by Schreinemachers *et al.*[4]

shift from animal-origin protein products to plant-origin protein products. Likewise, the high protein content of mung beans gives them a very good opportunity for growing a low-carbohydrate high protein market[18]. As chickpeas and dried peas are the major pulse crops in the European market, mung bean did not achieve the same level of popularity.

Following Asia-Pacific and North America, the European mung bean protein industry is the third largest market. Moreover, looking at the annual demand growth for mung bean, between 2017 and 2021, the volume of mung bean imported to Europe has grown at an annual rate of 2%. In 2021, 45 thousand tonnes of mung bean will be imported to the European market and this is estimated to be 40% more than the volume of mung bean imported in 2020. This could be imagined that demand for plant-based food has greatly grown during the COVID-19 pandemic (Fig. 1).

Not only the volume but also the value per kg of mung bean has also shown a positive annual growth of 7% during the last five years. These developments make the European market an attractive destination for mung bean producers seeking to export their products. Furthermore, the worldwide mung bean market is predicted to grow at a compound annual growth rate of 4% by 2027 due to the ever-growing attention of the public to healthy and plant-based food products[4].

Analysis of the production vis-avis export volume and value of mung bean by Ethiopia: Ethiopia ranks 7th in mung bean export to the world market earning USD 26,217,000 in 2019. Compared to the value earned in 2015 which was USD 533,000 the export earnings in 2019 is grown almost by 50 folds (Table 6). Exports from Ethiopia and Brazil are still increasing though a decline in the volume of exports from Myanmar and China has dropped significantly[4]. The nation is earning the USD 26,217,000 from the exported volume of 514, 22.74 tones which is produced over 41,633.20 ha of land.

The drops in the volume and value of mung bean by Myanmar and China are very good opportunities for Ethiopia in order to boost the productivity and volume of mung bean in the global market. As can be learned from the current situation in the nation, Ethiopia is suffering from a deficiency of foreign currency. According to the news by Semafor Africa on March 16, 2023, at 12:23 pm, the government of Ethiopia signed an agreement with the World Food Programme in February to supply the crop to the humanitarian organization to export wheat worth USD 200 million deals to the neighboring countries despite the severe

Table 6: Five years export value in USD of the top 10 mung bean exporting countries to the global market

| Exporters | Exported value 2015 | Exported value 2016 | Exported value 2017 | Exported value 2018 | Exported value 2019 |
|---|---|---|---|---|---|
| World | 1644343 | 1817370 | 1366818 | 1213200 | 893524 |
| Mynamar | 1012903 | 1113393 | 747275 | 550393 | 366310 |
| China | 227995 | 211733 | 217638 | 232234 | 208498 |
| Uzbekistan | N/A | N/A | 15647 | 70800 | 48289 |
| Indonesia | 46106 | 28250 | 30026 | 30049 | 35969 |
| Brazil | 0 | 934 | 4832 | 17473 | 28222 |
| Australia | 132286 | 158453 | 101456 | 94629 | 27107 |
| Ethiopia | 533 | 12684 | 20827 | 23724 | 26217 |
| India | 10424 | 16635 | 19928 | 19012 | 24868 |
| Thailand | 28667 | 23435 | 32087 | 21017 | 19025 |
| Aregentian | 19398 | 25078 | 19507 | 24362 | 18837 |

Team, 2020

Table 7: Ethiopian mung bean production statistics of the years from 2014-2016 G.C.

| Year of production (G.C.) | Producers (households) | Production (t) | Area (ha) | Productivity (ton $ha^{-1}$) |
|---|---|---|---|---|
| 2014 | 62,377 | 14,067.65 | 14,562.00 | 0.97 |
| 2015 | 136,392 | 27,158.98 | 27,085.92 | 1.00 |
| 2016 | 184,114 | 42,915.55 | 37,774 | 1.14 |

Yirga *et al.*[5]

famine citizens are experiencing. All this suffering is to earn a foreign currency reserve. The same post aggravates the move as “the import-dependent country is also grappling with a foreign currency crisis”. The International Monetary Fund says the country’s foreign exchange reserves can finance less than one month’s worth of imports[19].

“Aid agencies have appealed to international donors to help Ethiopia avoid a famine but Prime Minister Abiy Ahmed’s Government says it has enough wheat to feed the country’s 120 million people and meet its export obligations”.

Moreover, crops such as wheat which our government is attempting to export fetch less price compared to legumes such as; mung bean. The people of Ethiopia have several alternative legume crops that can substitute mung bean and the diverse agroecologies the country is endowed with are potential opportunities to be considered[19].

**Expansion potential of mung bean production and productivity in Ethiopia:** In Ethiopia, the number of producers or households that are engaged in the production of mung bean is increasing significantly along with the area coverage from time to time (Table 7). In 2014 the number of households engaged in mung bean production was 62,377 from which it grew to 136,392 in 2015. The number of households engaged in the mung bean production has increased by 119% in just one year. It continued to increase in 2016 by 35% over the figure in 2015 G.C and by 195% over the figure in 2014 G.C. Looking at the area coverage by mung beans, it was 14,562 ha in 2014 and grew to 27,085.92 ha in 2015 and then to 37,774 ha in 2016.

Proportional to the number of households engaged in mung bean production, the area covered by mung bean has also increased significantly. Looking at the figure in Table 7, compared to the area covered by mung bean in 2014, the area coverage in 2016 has shown almost a triple increment from where it was 14,562 to 37774 ha. Not only the area coverage but also the productivity has shown an increase year after year. It was 0.97 ton $ha^{-1}$ in 2014 and grew to 1.14 ton $ha^{-1}$ in 2016. Within two years 17.5% productivity enhancement is attained. Looking at the statistical data in Table 7 below, it is evident that along with the number of peasant households engaged in the production of mung bean, a significant expansion of area coverage by mung bean was demonstrated. Due to the attention given by the government as well as the peasant farmers boosting the yield per hectare of mung bean, the productivity is improved to 1.14 ton $ha^{-1}$ which is almost close to the world average productivity of mung bean (1.2 ton $ha^{-1}$)[6]. According to the green mung bean contracts signed by the Ethiopian Commodity Exchange, the classification of mung beans has been made based on the origin of the product across different woredas, zones and regions of the country. To ease the marketing system, delivery centers were also established on the basis of vicinity to the producer community. This all is to facilitate the marketing of mung bean and encourage mung bean production in the country. With the existing trend in the expansion of mung bean production and productivity, Ethiopia will become among the top two major mung bean producing and exporting countries to the global market.

## CONCLUSION

The consumers demand for mung bean-based food and feed products is increasing from time to time due to the gentle budget of the public from proteins of animal origin to proteins of plant origin in response to the COVID-19 pandemic. Despite the increasing demand for this same crop in the global market, the supply has sharply declined due to the failure of the two major exporting countries Myanmar and India to export the product to the global market. Ethiopia has conducive agroecological zones to produce mung bean with a similar or even better productivity level than the global average. The domestic and export market demand for the product is attracting smallholder and large-scale farmers to engage in the production of mung bean. These and other several factors are posing Ethiopia (a country with the multi-dimensional opportunity to produce the crop) to grow this crop and fetch a better foreign currency. If continuing with the existing expansion trend of "lands to mung bean", Ethiopia will be among the top three mung bean exporting countries to the global market along with boosting its foreign currency treasury.

## SIGNIFICANCE STATEMENT

The present study is significant as it will prominently address the statuses, challenges and potentials in the production and marketing of mung bean in Ethiopia. Given all the required edaphic, climatic and agronomic factors optimum for the production of mung bean, the crop can be among the top cash commodities of the nation in earning hard currencies. Production and marketing of mung bean demands understanding the effects of all the production requirements needed to produce a bean that meets the export standard and fetches better prices. Moreover, this study will contribute to the analysis of recent studies by examining the pertinent factors that affect the production and marketing of this crop in Ethiopia both for the domestic and export markets.

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