



A Pilot Review Study on Current Research Status and Economic value Limitations of Bread Wheat (*Triticum aestivum* L.) Production and Marketing in Ethiopia: Historical Perspective.

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Abstract

The primary goal of this review study is to convey an impression of the existing research status and economic value limitations of bread wheat (*Triticum aestivum* L.) production in Ethiopia. Bread wheat is a widespread crop in temperate countries and is being used as human food and livestock nourishments. It produces on wide farm lands than any other food crop and is one of the most significant sources of nutrients for humans in several countries of the world. The intent look of the plant is classic of the grass family, however the head or a spike is thickly overflowing with ounces. The utmost cultivars have awns, which are the attachments close to each spikelet, giving the spikes a hairy appearance. The good achievement of bread wheat production depends relatively on its adaptableness and great yield capacity, and also on the gluten protein parts, which weigh up the viscous-elastic things that permit its bread to be handled into bread, pasta, noodles, and other food produces. In terms of the human diet, it donates nutritive elements, useful phytochemicals, and nutritional fiber components. The existing minor review study relates with recent and the upcoming worries that comprise bread wheat production and quality with minimized inputs of agrochemicals and developing lines with improved quality for precise end-uses, notably for biofuels and human nourishment. The Economic value limitations analysis by means of a partial budgeting method was done on purposely designated bread wheat cultivars grain yields in order to decide the preeminent treatment by the utmost cost-effective earnings. The valuable marginal rate of return (8.50) and valuable benefit-cost ratio (8.07) was attained from the variety Hidassie/large seed size at a plant population of 300 seeds m^{-2} followed by a marginal rate of return (9.55) and benefit-cost ratio (8.05) were also gained once more from the variety Hidassie/large seed size at a plant population of 250 plants m^{-2} . So the most profitable cultivar and plant population level for farmers with low cost of production and higher profits were recognized to be the variety Hidassie/large seed size at the plant population level of 300 plants m^{-2} in the rain-fed cropping time is recognized as minimized cost of production with the maximum profit and can be validated for the farmers of bread wheat producers.

1. INTRODUCTION

Bread wheat (*Triticum Aestivum* L.) is one of the numerous cereal crops mostly grown in the hilltops of Ethiopia. It is produced mostly in southeast central and northwest areas of the country. Small quantity of bread wheat is similarly produced in the rest of the south and north provinces of the country. Its production is greatly focussed among the latitudes of 30° and 60°N, and 27° to 40°S and within 60 the temperature range of 3°C to 32°C (Anbessie D., Abebe M., and Dechassa H. 2020). Bread wheat is a significant crucial food crop in Ethiopia, mostly in urban areas. It is an essential food in the foods of several Ethiopian, in case around 15% of the caloric consumption for the country's above 90 million populaces (FAO 2015a), engaging it afterwards of maize and somewhat ahead of teff, sorghum, and enset, which provide about 10-12% each (Minot *et al.*, 2015). Bread wheat is also the fourth widespread cereal crop produced by near to 5 million small-scale farmers, which makes about 35% of all smallholder farmers in the country. It accounts near to 17% of arable land and a fifth of all cereal food crops produced in the country in 2013/14 (CSA, 2013/14a).

Next to South Africa, Ethiopia is the 2nd dominant bread wheat producer in sub Saharan Africa (FAO 2015b). Until now, various cultivars of bread wheat and durum wheat have been technologically advanced to gratify the rising production demands and accordingly, around 76 bread wheat and 34 durum wheat cultivars have been released (MoANR, 2016). Bread wheat feeding raised from 2.1 million tons to 4.2 million tons, instead of an annual increase of about 4.2% amongst 1996 and 2014 In 2008 Ethiopia, for instance, trade in more than a million tons of bread wheat, which was comparable to around 40% of the entire local production and almost 250% of the promoted capacity (Rashid and Solomon, 2014). In 2013/14 the country trade in about 1.39 million metric tons, which is around 34% of the internal production and above about 160% of the promoted bread wheat in the country (Minot *et al.*, 2015). In similar with the accumulation in bread wheat importation, the country was enforced to employ a considerable quantity of overseas currency exchange that mainly arises from exportation of other predominantly agricultural produces.

As a whole, the rising price tendency appears to persist in the near imminent. The increasing basic shortage in bread wheat supply and the government's energetic role, mutually in terms of making bulky investments in extension lead plans and accepting protective programmes to guarantee government control of entirely profitable bread wheat importations, requirements studies on the arrangement and performance of bread wheat production. The current study intents to contribute to this on condition that an impression of the existing eminence and significant challenges of the Ethiopian bread wheat production. A well thoughtful about the present status of bread wheat sector and its value chain, the formal marketing preparations, and microeconomic dealer behaviors of bread wheat market members contributes to origination of rules that are market-enhancing as well as that might improve native bread wheat production (Samuel Gebreselassie, *et al.*, 2017). The present review study is concentrated on the continuing research areas in Ethiopia, challenging encounters in the future and a conceivable technique which ready to deal with the critical issues advantageously in order to balance the demand and supply proportions. This information is used to highlight important proofs on bread wheat research status and production comprising the economic value limitations in the country as well as the behavior and challenges of dealers in the bread wheat markets. The last section provides concluding assumptions and policy endorsements.

2. RESULTS AND DISCUSSIONS

The good achievement of bread wheat production depends relatively on its adaptableness and great yield capacity, and also on the gluten protein parts, which weigh up the viscous-elastic things that permit its bread to be handled into bread, pasta, noodles, and other food produces. In terms of the human diet, it donates nutritive elements, useful phytochemicals, and nutritional fiber components. The existing minor review study relates with recent and the upcoming worries that comprise bread wheat production and quality with minimized inputs of agrochemicals and developing lines with improved quality for precise end-uses, notably for biofuels and human nourishment. The Economic value limitations analysis by means of a partial budgeting method was done on purposely designated bread wheat cultivars grain yields in order to decide the preeminent treatment by the utmost cost-effective earnings. The valuable marginal rate of return (8.50) and valuable benefit-cost ratio (8.07) was attained from the variety Hidassie/large seed size at a plant population of 300 seeds m^{-2} followed by a marginal rate of return (9.55) and benefit-cost ratio (8.05) were also gained once more from the variety Hidassie/large seed size at a plant population of 250 plants m^{-2} . So the most profitable cultivar and plant population level for farmers with low cost of production and higher profits were recognized to be the variety Hidassie/large seed size at the plant population level of 300 plants m^{-2} in the rain-fed cropping time is recognized as minimized cost of production with the maximum profit and can be validated for the farmers of bread wheat producers.

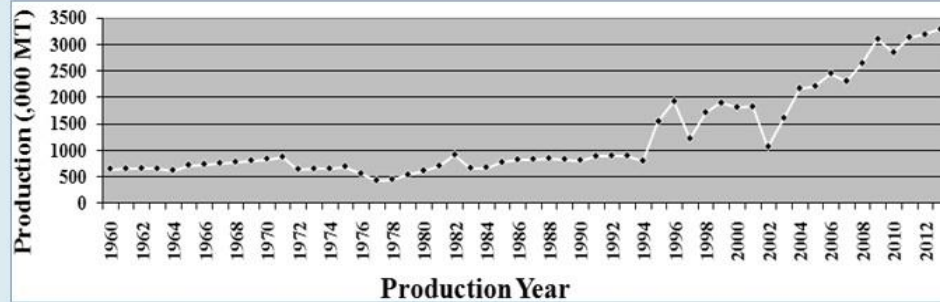


Figure 1: The national average yield Status of wheat production in Ethiopia from the year 1960 - 2012 GC.
Source: USDA, <http://www.indexmundi.com/>

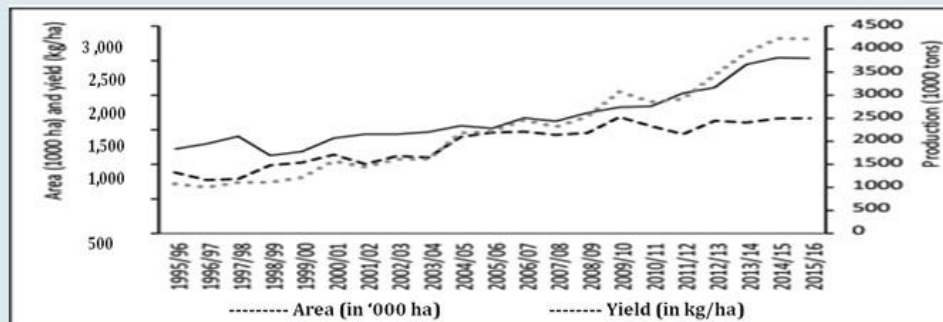


Fig-2: Wheat production, area cultivated, and yields in Ethiopia from the years (1995/1996-2015/2016)
Source: Central Statistical Agency (1995/1996 – 2015/2016).

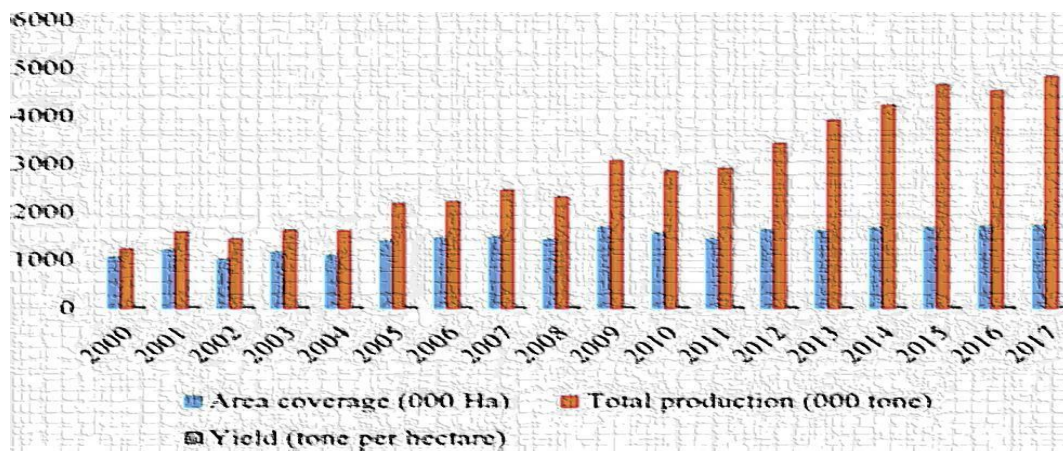


Fig-3: Status of wheat production, area coverage and productivity of Ethiopia from 2000 to 2017
(Source: FAOSTAT, 2018 online report)

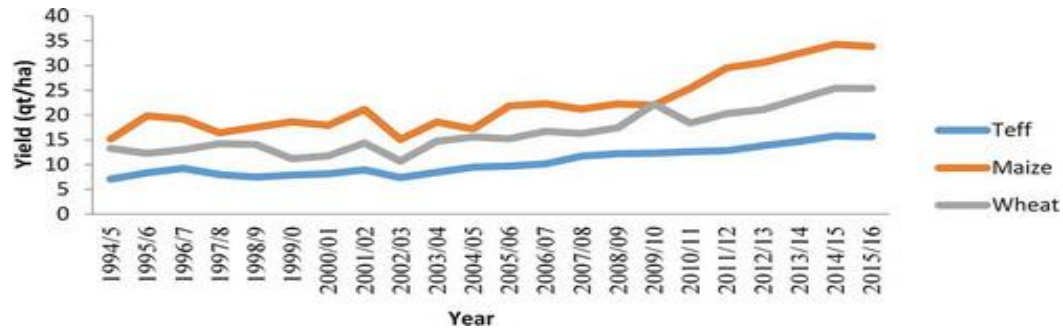


Figure 4. Yield status of wheat, as compared to maize and teff from 1994 to 2016 (Source: PARI, 2015).

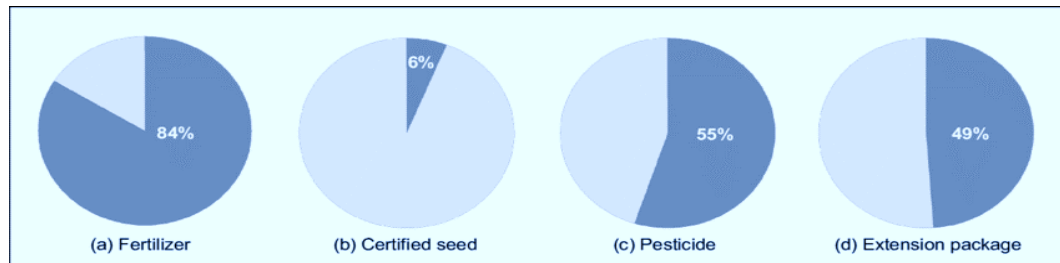
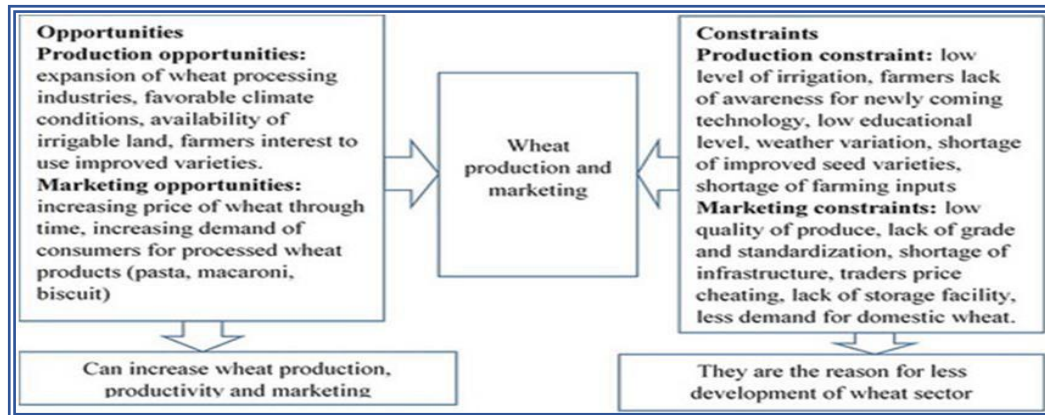


Fig-5. Share of bread wheat area covered by modern inputs and practices (2015/2016)

Source: Central Statistical Agency (2015/201)

Fig-6. Conceptual framework of the wheat production opportunities and production constraints



Dominance Analysis of Bread Wheat Grain Yields.

Treatment No.	Variety/Seed Size	PPL	TVC (ETB/ha)	NBV (ETB/ha)	Dominance
1	Shorima/Small	250 seeds m ²	5382	38051	
5	Dendea/Mediu	250 seeds m ²	5595	40087	
2	Shorima/Small	300 seeds m ²	5656	42366	
9	Hidassie/Large	250 seeds m ²	5889	44460	
6	Dendea/Mediu	300 seeds m ²	5931	38763	Dominated
3	Shorima/Small	350 seeds m ²	6001	41761	Dominated
10	Hidassie/Large	300 seeds m ²	6175	46735	
4	Shorima/Small	400 seeds m ²	6178	38672	Dominated
7	Dendea/Mediu	350 seeds m ²	6236	43320	Dominated
11	Hidassie/Large	350 seeds m ²	6541	33720	Dominated
8	Dendea/Mediu	400 seeds m ²	6572	47183	
12	Hidassie/Large	400 seeds m ²	6907	30117	Dominated

Note: PPL = plant population level; TVC= total variable cost; NBV = net benefit value.

3. CONCLUSION

Over the earlier three decades, as good as bread wheat research and production status have revealed growing inclinations in Ethiopia. Bread wheat importation has also grown significantly over the past years. However, this substantial improvement in national production and importation of bread wheat has not inverted the growing tendency in bread wheat production and product prices, showing an even sooner growth of wheat demand. Even with a huge investment by the Ethiopian government in agricultural extension programs, studies proves that growing wheat supply insufficiency in the coming decades. This recommends the requirement for increased but well-organized investment not only in wheat research and production but also in wheat processing and marketing. Even if Ethiopian bread wheat producers are mostly small, a review of relevant literature indicates that moderately large amount of farmers and large-scale producers supply most of the marketed local bread wheat in the country. For example, only 10% of bread wheat producers sell more than 40% of their bread wheat harvest while only 5% sell more than half of their bread wheat production. The top 20% of the bread wheat sellers account for 60% of the local wheat sale. Then again, above half of the bread wheat farmers do not sell any of their wheat production. These facts are very necessary in terms of notifying strategic rules and formations on the necessity to rise bread wheat production in general and marketable bread wheat in particular. In this way, institutional and policy improvements to advance the supply value chain, development of irrigation and mechanized farming in addition to further investment in research and development can be worthwhile policy interferences to improve wheat supply in the country. Bread wheat is broadly imported by the government. However the result of international trade on the national bread wheat market is predictable to be inadequate as the government made supply and market value chain for such trade in bread wheat intelligently. Until now, trade in bread wheat is anticipated to influence bread wheat request on the national market of those who obtain endowed wheat, which are millers and few organised customers. As a result, flour prices should shows the largest response to worldwide bread wheat market variations, followed by extensive wheat grain prices. Producer and consumer prices along with the bread market are anticipated to react merely minor to international wheat prices. This observation, however, require to be verified by means of more experimental research. These limitations were largely band together into two groups: practical and socio-economic. The two main bread wheat growing environments were covered: highland cool wet areas and low-altitude warm dry areas.

4. RECOMENATION

Regarding bread wheat varietal variations, studies shown that selecting varieties which are related to the stated population and use by farmers may be a reasonable choice for improving bread wheat yields. Based on the result of the economic value limitations analysis, among four plant population levels the use of 300 and 250 seeds m^{-2} for the variety Hidassie/large seed size is superior in most of bread wheat agronomic traits. The bread wheat varieties seed size and plant population rates interaction effect showed that most economical and profitable grain yield of 4100 and 4339 $kg\ ha^{-1}$ was produced at seed rate of 250 and 300 plants m^{-2} for the variety Hidassie/large seed size respectively