

# Pre-Extension Demonstration of Newly Released Maize Variety in Selected Potential Maize Produced Area of Ethiopia

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## **Abstract**

*This activity was conducted from 2015- 2019 mainly in selected district of Oromia, Amara, Tigray and SNNP region. With objectives of helping farmers to use improve yield of maize through promotion and awareness creation and to assess feedback and reflection from maize value chain actors. Farmers, developmental agents, agricultural expert and agricultural official and Researcher were participated on field days. Field day participants, Feedback and reflection data were collected by using data collecting sheet and means of checklist respectively. In addition, seed production increment data was collected from selected seed producing company. STATA12 were employ to analyze data Demands of BH546 seed variety increase year to year. The productivity of the BH546 variety was recorded across the region average was 61.93Qts/ha ranging from 25Qts/ha to 128Qts/ha. There is productivity deference, it might be soil factor, location, management and anther related influential variables. Hence, which one is significantly affect the potential of variety need further study. When we compare produced seed data of three preceding years that show the increment of seed production from 11904Qts to 76804Qts in five selected seed producing enterprise. Therefore, seed producing company should increase, particularly with respect to the production and distribution of BH546 improved seed variety.*

**Key words:** Pre extension, Demonstration, BH546

## **Introduction**

Currently, Ethiopia is the fourth largest maize producing country in Africa, and first in the East African region (FAO, 2012). It is also significant that Ethiopia produces non-genetically modified (GMO) white maize, the preferred type of maize in neighboring markets. This strategy envisions exports markets being a significant part of the demand

sink for Ethiopian maize. Maize is largest cereal commodity in terms of total production, acreage, and the number of farm holdings. It ranks second after teff in area coverage and first in total production. The results of the year (CSA, 2016), Meher season postharvest crop production survey indicate that total land areas of about 12,558,444.55 hectares were covered by grain crops. Out of the total grain crop areas, 81.27% (10,144,252.30 hectares) was under cereals. Of this maize covered 16.98% (about 2,135,571.85 hectares) and average yield Q/t/ha (3.67) and gave 78,471,146.57 quintals (CSA, 2016). The productivity is very low as compared the developed counties 6.2t/ha because of lower utilization of improved agricultural technologies such as improved maize variety and chemical fertilizer among maize producing farmers. Maize is mainly grown in the four big regions of the country: Oromia, Amhara, SNNP, and Tigray. Oromia and Amhara contribute to almost eighty percent of the maize produced in 2012 (CSA, 2015/2016). Among the top maize producing zones are: East wellega (4, 2 million q), kelemwellega (4.16 millionq), Kemashi(4.1millionq), West gojam (4millionq), Horoguduru (4 millionq), Silte (3.45millionq), Awi(3.9 miillionq), west wellega (3.9 millionq), West Arsi (3.8millionq),Metekle (3.8 millionq). Other zone such as Gurage, GamoGofa and Ilubabor Zone also grow maize and has the potential to increase their current production level in the future.

Demonstration farms are used to teach various agricultural techniques and technologies, showcase new or improved crops. They also serve as a venue to research and test new methods alongside traditional ones. The opportunity to observe physical and tangible results can also help convince farmers to capture and follow the new farming technologies.

Considering the contribution of maize in food security, Bako national maize research center coordinate pre extension demonstration activities with different stakeholders in four regional state of the country. Therefore, this paper focus to the access the impact of demonstration, flied visit and field day preparation on information transformation, awareness and demand creation. The information generate from this survey report would be useful to seed producing company and researcher.

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## **Material and Methods**

### **Description of the study areas:**

The demonstration was conducted in selected area of the country at Oromia, Amahar, SNNP and Tigray region; the entire regions have potentials for maize production. These activities conducted on 25 districts at 98 kebeles and 2641 plots.

### **Site and farmers selection:**

The study was conducted in ten district of Oromia region (Namely Shalla, Arsi negele, Gomma, OmoNadda, T.Afeta, GobuSayo, Sibusire, BakoTibe, Gudat Bila and Ilugalan ), Seven district of Amahara region ( Namely Burezuria, Wonberma, Jabitahnan, Dembecha, NorthMecha, Southachefer and Gianggua), Four district of SNNP ( Namely, Bolososorre, Bitta, Gimbo and Eastmeskan) and three district of Tigray region at L/adiabo, Kolatemben and Tselemt. The above districts were purposively selected based on production potential accordingly. All the districts are dominated with mixed crop livestock farming systems where farmer is pre dominantly produce maize. Totally 2641 interested farmers were selected based on their experience and willingness to managing crop and contribute a land size of 1875m<sup>2</sup>.

First the appropriate site was selected in collaboration with kebele development agent and district agricultural extension process owner. Appropriateness and farming history of the area to maize production are the main consideration for site selection. All necessary input, required to demonstration plots and varieties were distributed for each and individual host farmers. Used agronomic recommendation, spacing between plant and row is 0.80m and 0.40m respectively. Farmers allocate their land voluntarily for the demonstration with free of any charge and fully involved from land preparation to harvesting.

Field day was conducted to demonstrate and create demand for the technology with participation of different respective zone, district and kebele administrative, Officials and experts with coordination of seed produced company and NGOs. All participants were interested with the introduced varieties. BH546 have well promoted for the past four

consequent years throughout the country, for the reason that, the variety is well known by maize value chain actor across the country.

### **Data Collection**

Qualitative and quantitative data were collected such as, numbers of Field day participants; feedbacks of participants and farmers reflection were collected. The field day participants' data were collected by using data collecting sheet while feedback and reflection were collected by means of checklist next to conducting group discussion.

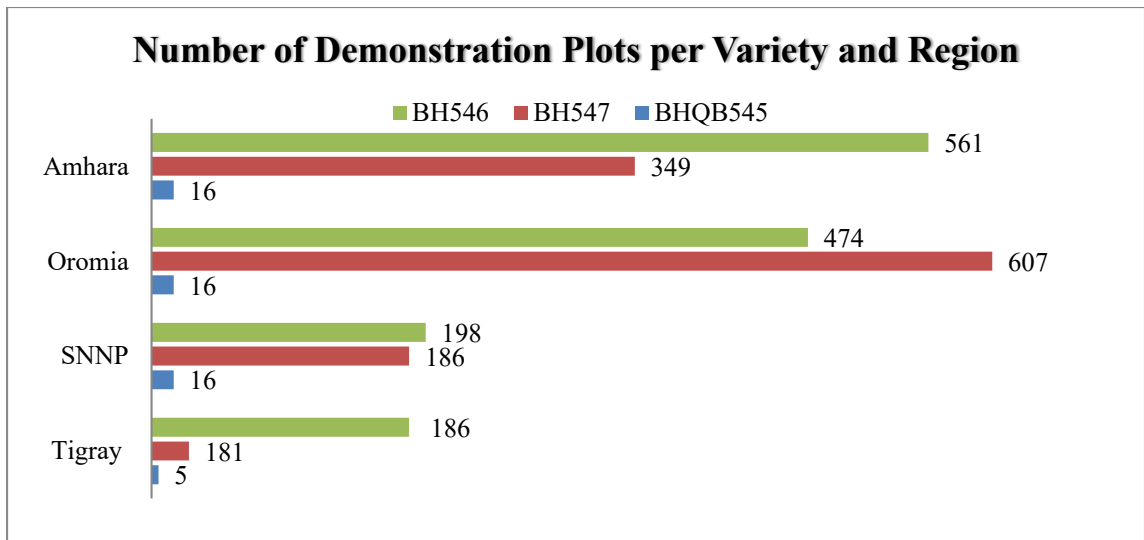
### **Data Analysis**

Trend analyses, farmers and stakeholders feedback. Compare and contrasting recorded data. Descriptive statistics like mean Standard deviation (S.D) and percentages were employed to analyses collected data.

### **Result and Discussion**

Selected farmers collect free seeds and Fertilizer (UREA, NPS) and agree to cover the costs of other recommended inputs and all production process of demonstration plots. Technical support and advice were delivered, from agricultural experts to selected farmers that conduct all agricultural operations on their demonstration plots, from seed bed preparation to post-harvest.

With an effort to introduce and promote new agricultural technology 2641 demos were prepared by collaboration with BNMRC/CIMMYT supported/, Seed Companies, AMSAP & Allied.



**Figur1. Demonstration plots per variety**

Field days were organized by different organization. District Agricultural Expert, DAs, Government Official and Researcher were participated on the event. Totally 95138 (34783F) were participated on affair. The share of female participations on the field day is 36.5%. In all field day, lead farmers and agronomic experts explained/ introduced the technology and all about activities were perform by farmers on the demonstration plots. Practically, were demonstrated the technologies and the farmers had the chance to compare different maize varieties with the intention of planted in their respective areas.

**Table 1. Field Day participants Per region**

| Region       | Organization | Field Day Participants |              |              |
|--------------|--------------|------------------------|--------------|--------------|
|              |              | Female                 | Male         | Total        |
| Oromia       | Seed Company | 9718                   | 9201         | <b>18919</b> |
|              | AMSAP        | 1656                   | 4593         | <b>6249</b>  |
|              | BNMRC        | 1055                   | 2971         | <b>4026</b>  |
| Amhara       | Seed Company | 8504                   | 8050         | <b>16554</b> |
|              | AMSAP        | 2408                   | 15531        | <b>17939</b> |
| SNNP         | Seed Company | 6074                   | 5750         | <b>11824</b> |
|              | AMSAP        | 2058                   | 4790         | <b>6848</b>  |
| Tigray       | AMSAP        | 3310                   | 9469         | <b>12779</b> |
| <b>Total</b> |              | <b>34783</b>           | <b>60355</b> | <b>95138</b> |

*Source: BNMRC and AMSAP Survey result*

### Farmer’s feedbacks on demonstrated varieties

- Excellent, full kernels throughout cob
- In most cases has two average sized cobs per plant
- Cob tips are fully covered, preventing exposure to rain and pests
- Has fewer stalk borer attacks due to its strong and vigorous stand
- Relatively tolerant to blight diseases compared to BH-547
- Tolerant to lodging
- It is sweet and tasty
- Stalk not preferred for firewood compared to BH-547
- Relatively late maturing compared to Limu variety.

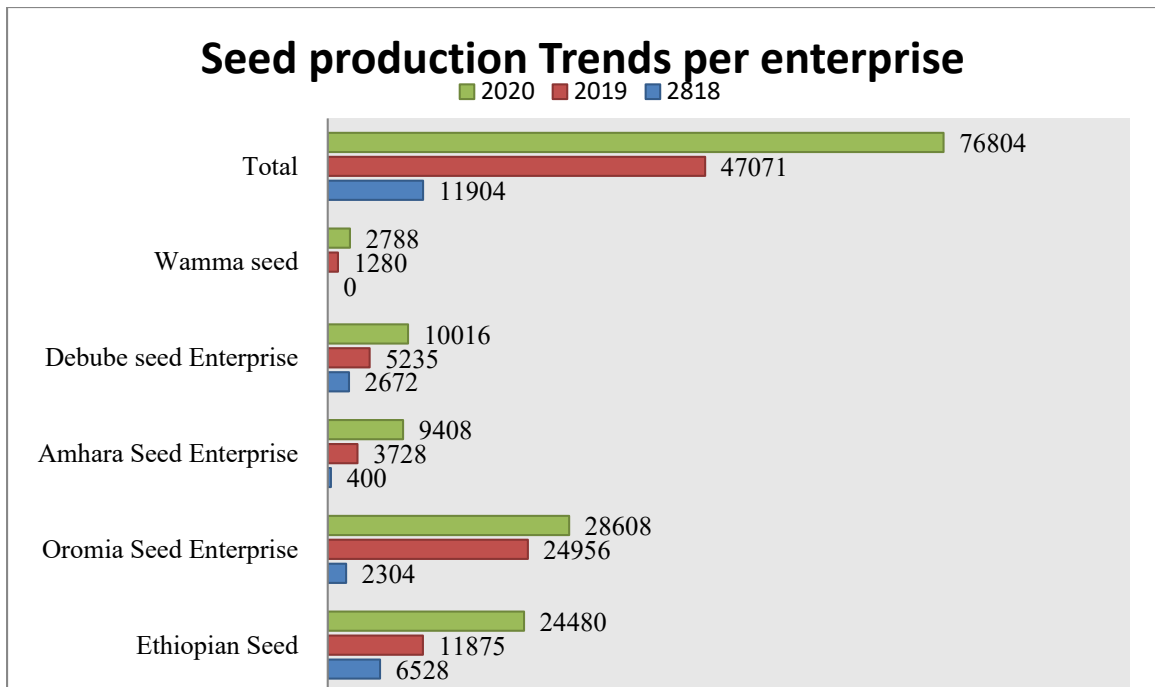
The survey was conducted totally on 2580 plots. According to the survey result (Table 2.) the average productivity of BH546 was 61.93Qts/ha ranging from 25Qts/ha to 128Qts/ha whereas the average productivity of BH547 and BHQP545 was 57.6Qts/ha and 58.33Qts/ha respectively. If consider only the result of BH546 show that wide difference of productivity, ranging from 25Qts/ha and 128Qts/ha. The reason behind this productivity difference might come due to rainfall, altitude, soil fertility, management practice and other influential factors.

**Table 2. Yield Statuses of BH546,547, and BHQP545**

| Variety | Obs  | Mean     | Std, Dev. | Min | Max |
|---------|------|----------|-----------|-----|-----|
| BH546   | 1377 | 61.93499 | 16.78788  | 25  | 128 |
| BH547   | 50   | 57.6     | 16.0344   | 24  | 89  |
| BHQP545 | 1153 | 58.3358  | 16.85908  | 12  | 129 |

**Total number of sample Plot is 2580**

According to the production report of seed producing companies (Table 3.) The Trend of the past three years BH546 seed production growth shows that, the demand of the variety increases year to year.



**Figure 2. Three years seed production trend**

### Conclusion and Recommendation

Despite different evidence indicated that promotion activities conducted by different stakeholder including government generate significant progress on demand creation, popularizing and dissemination of the technologies. Field days can help farmers to observe crop physical performance, crop stand and Yield potential. Moreover, they having opportunity to convince, capture and follow new technology/ farming techniques. The result of survey indicates that, participatory field day preparation and demonstration have encouraging effect on popularizing new technologies. In addition, Working with collaborating of different concerned stockholders has positive impact on improved maize technology promotion.

BH546 improved maize variety has yielded advantage over BH547 and BHQP54. BH546 was demanded by participant farmers because of productivity and reasonable price of seed comparing to other especially BHQP545.



Even though, the production of seed increases, farmers seed demand not satisfied yet. Therefore, seed producing company should enlarge production of seed, particularly with respect to the production and distribution of the variety.

There is productivity deference. It might be soil factor, location, management and anther related influential variables. Hence, which one is significantly affect the potential of variety need further study.

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