

Registration of 'Gudatu' Finger millet (*Eleusine coracana* sub spp. *coracana*) Variety

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Abstract: 'Gudatu', finger millet (*Eleusine coracana* (L.) Gaertn) variety, with the pedigree of Acc. 215990 was developed and released by Bako Agricultural Research center for western Oromia and similar agro-ecological areas of Ethiopia. This variety was evaluated against two standard checks (Boneya and Wama) for grain yield, disease reaction and other agronomic traits across three locations (Bako, Gute, and Diga) during the 2010, 2011 and 2012 main cropping seasons. Genotype and genotype by environment interaction (GGE) analysis revealed that Gudatu was stable and high yielder with yield advantage of 10.56 % over the standard check, Wama. Consequently, Gudatu was released in 2014 for its high grain yield potential and moderately resistant against blast disease, the major constraint of finger millet production in western Ethiopia.

Keyword: Genotypes; Finger millet (*Eleusine coracana*); *Magnaporthe oryzae*

1. Introduction

Finger millet (*Eleusine coracana*) is an annual allotetraploid cereal belonging to the family Poaceae, widely grown in the arid and semiarid areas under varied agro-climatic conditions (Hilu and de Wet, 1976). Finger millet is adapted to a wide range of environments and is known for withstanding harsh environmental conditions (Lenne *et al.*, 2007). Limited availability of stable high yielding and disease tolerant finger millet variety is one of the major production constraints in the country. Therefore, development of adaptable, stable high yielding and disease resistant variety under different environments is the first and foremost steps in plant breeding.

2. Varietal Origin and Evaluation

Gudatu (Acc. 215990) was introduced from Ethiopian Institute of Bio-diversity (IBC). The variety and other pipeline genotypes were evaluated against the standard checks, Boneya and Wama, across three locations (Bako, Gute & Diga) for three consecutive years (2010-2012).

3. Agronomic and Morphological characteristics

This released variety, Gudatu (Acc. 215990) is characterized by light brown seed color, average 1000 seeds weight of 3.33 grams and has an average plant height 91.97 cm. The detailed agronomic characteristics of the variety are indicated in Table 1 below.

4. Yield Performance

Gudatu (Acc. 215990) gave seed yield ranging from 2.0 to 2.1 t h⁻¹ on a farmer's field and 2.1 to 2.3 t h⁻¹ on research field. The variety showed yield advantage of 10.6% over the then recent check, Wama.

5. Stability and Adaptability Performance

Eberhart and Russell (1966) model revealed that Gudatu variety showed regression coefficient (bi) closer to unity stable and widely adaptable variety than the remaining genotypes. Besides, genotype and genotype by environment (GGE) biplot analysis showed that Gudatu (Gn2) fell in the central circle, indicating its high yield potential and relative stability compared to the other genotypes (Fig 1). Generally, Gudatu (Acc 255990) was more stable and high yielder than other pipeline genotypes and standard checks.

6. Reaction to Major Diseases

Gudatu is moderately resistant to major diseases particularly blast (*Magnaporthe oryzae*), a devastating disease that affect all above ground parts of the plant.

7. Conclusion

The finger millet variety Gudatu, gave high grain yield, showed better adaptability and stable performance than the standard checks. The variety is also tolerant to blast disease. Therefore, it was released and recommended for Bako, Gute, Diga and areas with similar agro-ecology in the country.

8. Acknowledgments

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9. References

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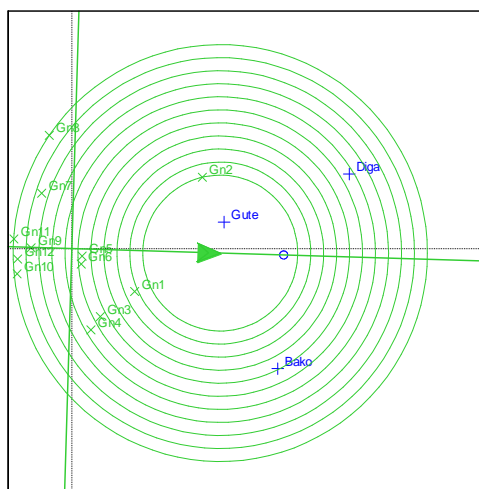
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Table 1. Agronomic and Morphological characteristics of Gudatu Finger millet variety (Acc. 215990).

Agronomic characteristics of Finger millet variety Gudatu	
Variety name	Gudatu
Adaptation area	Bako, Gute, Diga and other areas with similar agro- ecology
Altitude (m.a.s.l)	1400- 1900
Rain fall (mm)	1200 – 1300
Days to heading	70-80
Days to maturity	145-150
1000 seed weight (g)	3.33
Plant height (cm)	91.97
Seed color	Light brown
Growth habit	Erect
Grain yield (ton/ha)	
On farmer’s field:	2.0 – 2.1
On research field:	2.1 – 2.3
Blast disease (<i>Magnaporthe oryzae</i>) disease reaction	moderately resistant
Year of release:	2014
Breeder/Maintainer:	Bako Agricultural Research Center (BARC/OARI)



PC1 - 78.74%

Key: Gn = Genotype

Figure 1. GGE biplot analysis depicting the stability of tested genotypes and test environment.