Registration of *Wama* Finger Millet (*Eleusine corocana* L.) Variety

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Abstract: Finger millet is one of the major cereal crops in western Ethiopia including Bako areas where the present study conducted. *Wama* is a common name of a finger millet (*Eleusine corocana* L.) variety with pedigree name of KNE # 392. It was selected out of finger millet breeding lines introduced from Kenya and released in 2007 by the Bako Agricultural Research Center for western Ethiopia. *Wama* was tested at on-stations of Bako, Billo-Boshe and Gute and their respective on-farms. It exceeded the standard check, *Boneya* by 10% in grain yield. Results of yield stability study revealed that *Wama* was a stable variety. It has brown seed color, larger seed size and larger harvest index than *Boneya*. *Wama* is also moderately resistant to diseases such as head blast, smut and leaf spot. The breeder seed of Wama is maintained by the Bako Agricultural Research Center.

Keywords: Finger Millet; Variety Registration; *Wama*

1. Morpho-agronomic Characteristics of the Variety

Wama is a brown seeded variety developed mainly for its high grain yield and large seed size. It has taller plant height; larger flag leave length, higher harvest index and larger ear weight than the standard check, *Boneya*. *Wama* has green stalks, green and semi compact inflorescence, and round seed. This variety is highly preferred by farmers mainly due to its large seed size. The yield and summary of agronomic and morphological characters is given in the Table 1.

2. Yield Performance

At its early breeding stage, it was evaluated at Bako, Billo-Boshe, Gute and Loko in altitude ranging from 1300 to 1900 meters above sea level. In multi location trial comprising ten varieties, *Wama* was tested at Bako, Billo-Boshe and Gute for three years (2003-2005) with the standard check, *Boneya*. The mean grain yield of *Wama* was 2.2 tons ha^{-1} with 10% yield advantage over the standard check (20 tons ha^{-1}). In on-farm trials conducted across six locations, *Wama* gave a grain yield ranging from 1.6 to 3.5 tons ha^{-1}.

3. Yield Stability Test

Yield stability parameters for eleven finger millet varieties tested for two years and at three locations were studied based on the methods of Eberhart and Russel (1966). The result of this study revealed that Wama had unity regression coefficient associated with the highest mean grain yield implying that it has good general adaptability.

4. Disease Reaction

Wama was tested for its reaction to different diseases on the standard rating scale of 1-9, where 1 being highly resistant and 9 is highly susceptible. It was found to be moderately resistant to the most common diseases such as head blast (*Pyricularia grisea*), smut (*Melanopsichium eleusis* (Kulk) and leaf spot (*Cercospora eleusine*) (Table 1).

5. Food Quality Analysis

Wama was evaluated for its *injera* making character at the Melkasa Agricultural Research Center Food Science Laboratory. The analysis result showed that its *injera* has large scattered eyes, soft texture, slightly bitter taste and generally good acceptance with regard to those factors that affect food quality (Table 2).

6. Conclusion

Wama has better grain yield performance, good general adaptability, larger seed size, and moderately resistant to head blast, smut, and leaf spot than the standard check, Boneya. It has also a good acceptance in terms of its food quality characters as well as a good adoption rate among the farming community in the study area.

7. Acknowledgements

The authors gratefully thank Mrs. Lalise Bultuma, Mr. Tadesse Terfa and Mr. Fikiru Merga for their assistance in data collection. Their great thanks also go to the Food Science Research Division of the Melkasa Agricultural Research Center in general and Dr. Senayit Assefa and Mr. Mulugeta Tamir in particular, for their assistance in food quality analysis.

8. Reference

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ISSN 1992-0407

Table 1. Agronomic and morphological characteristics of *Wama* and *Boneya* finger millet varieties.

Characteristics	Wama (KNE# 392)	Boneya (standard check)
Adaptation area		
Altitude (masl)	1400-1900	1400-1900
Rainfall (mm)	1000-1200	1000-1200
Fertilizer rate		
N (kg ha^{-1})	41	41
P_2O_5 (kg ha^{-1})	46	46
Fertilizer application time		
at planting (kg ha^{-1})	46 P_2O_5 + 18 N	46 P_2O_5 + 18 N
at early tillering (kg ha^{-1})	23 N	23 N
Fertilizer application method	drilling in row	Drilling in row
Planting date	Early June	Early June
Seeding rate (kg ha^{-1})	15	15
Row spacing (cm)	40	40
Days to heading	86	84
Days to maturity	153	146
Inflorescence shape and finger branching	Semi-compact	compact
Inflorescence pigment	Light green	Purple green
Plant height (cm)	99	92
Finger length (cm)	7-9	5-6
Flag leaf length (cm)	43	31
Floret No./spiklet	54	64
Growth habit	Erect	Erect
Ear weight per plant (g)	11	9
Grain yield per plant (g)	9.5	7.5
Grain shape	Round	Round
Fingers per main ear	6	9
Harvest index (%)	30	20
Seed color	Light-brown	Brown
1000 kernel weight (g)	3.4	3
Disease reaction (1-9 scale)		
Head blast	4.0	3.5
Smut	3.0	2.0
Leaf spot	3.0	2.0
Mean grain yield (tons ha^{-1})		
Research field	2.2	2.0
On farmers' field	1.8	1.6
Year of release	2007	2002

Table 2. Summary of *injera* making quality analysis.

Variety	Quality parameter				Acceptance* (1-5 scale)
	Color	Eye quality	Texture	Taste	
Wama	Brown	Large scattered	Soft	Slightly bitter	2.5
Boneya	Brown	Small scattered	Soft	Sour	2.9

** 1 = poor; 5 = best for general acceptance*