

Registration of “*Chewaka*” Upland Rice Variety

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Abstract: The name *Chewaka* was given to the upland rice (*Oraiza sativa* L.) variety with the pedigree of YIN LU20, which was developed by Bako Agricultural Research Center between 2011 and 2013. The *Chewaka* variety and the other pipeline upland rice genotypes were evaluated against the standard check (*Superica-1*) across six environments (Chewaka, Boneya, Bako and Guttin in 2011, and at Boneya and Bako in 2012) main cropping seasons. The variety *Chewaka* out-yielded the standard check (*Superica-1*) by about 83%. The variety also showed resistance to the rice blast disease and it was found to be stable over the tested locations. It was released by Bako Agricultural Research Center in 2013.

Keywords: Genotypes; *Oraiza sativa*; Pedigree

1. Introduction

Rice cultivation has been started only recently in Ethiopia in general and in western Oromia Region in particular. The areas such as Chewaka and Guttin are suitable for upland rice cultivation. Bako Agricultural Research Center evaluated 11 genotypes and has released a variety named *Chewaka* variety for the above areas and similar agro-ecologies.

2. Varietal Origin and Evaluation

Chewaka is the name given by the breeder to a released upland rice (*Oraiza sativa* L.) variety with the pedigree of YIN LU20. This and the other pipeline upland rice genotypes were evaluated against the standard check viz., *Superica-1*, across six environments (Chewaka, Boneya, Bako and Guttin in 2011, and at Boneya and Bako in 2012) main cropping seasons.

3. Agronomic and Morphological Characteristics

The released variety, *Chewaka* (YIN LU20) has a white paddy color with a cylindrical seed shape, large seed size and thousand grain weight of 33.5 grams. The variety has wide leaves which are droopy (Table 1).

4. Yield Performance

Chewaka variety was evaluated along with the standard check (*Superica-1*). The standard check was primarily evaluated and recommended for Bako area and its vicinities based on its adaptability and yield performance.

Chewaka produced significantly higher grain yields than the standard check across years and locations. *Chewaka* and *Superica-1* produced grain yields of 4.2 and 2.3 tons per hectare ($t\ ha^{-1}$) on research plots and 3.3 and 2.0 $t\ ha^{-1}$ on farmers' field, respectively (Table 1). This means that the grain yields of *Chewaka* was found to be 83% and 65% higher than the grain yields of *Superica-1* in research and farmer's fields, respectively.

5. Stability of Performance/Adaptation

Analysis using the Eberhart and Russell (1966) model showed that *Chewaka* has regression coefficient (b_i) closer to unity and nearly acceptable deviation from regression (s^2_{di}), indicating that the variety gave relatively stable grain yields across the locations compared to the remaining tested genotypes and checks. Besides, the *Chewaka* variety showed yield advantage of about 83% over the standard check, *Superica-1*.

6. Reaction to Major Diseases

The production and productivity of upland rice are affected by diseases such as rice blast caused by *Magnaporthe oryzae*, sheath blight and brown spot. Above all, blast is the most serious disease of rice causing severe yield losses (Ou, 1985; Mousanejad, 2010). The standard check was highly infected by blast disease. However, the *Chewaka* variety showed resistance to moderate resistance to the blast disease throughout the field evaluation periods.

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Table 1. Agronomic/morphological characteristics of upland rice varieties, *Chewaka*, and *Superica-1*

Characteristics	<i>Chewaka</i> (YIN LU20)	Standard check (<i>Superica 1</i>)
Adaptation area	Chewaka, Guttin and similar areas	
Altitude (masl)	≤ 1650	
Rainfall (mm)	800-1200	
Fertilizer rate		
Nitrogen (kg N ha ⁻¹)	41	
Phosphorus (kg P ₂ O ₅ ha ⁻¹)	46	
Fertilizer application time	Applied in two split: first split which is 1/2 of the total dose at planting stage and the second split, which is 1/2 of the total dose at Panicle Initiation	
Fertilizer application method	Drilling in rows	
Planting and/or seeding		
Planting date	Late April	
Seed rate (kg ha ⁻¹)	80	
Row spacing (cm)	20	
Optimum sowing depth (cm)	2-3	
Weeding frequency	3-4 times depending on weed infestation	
Days to heading/flowering	94	89
Days to maturity	128	155
Plant height (cm)	117	102
Panicle length (cm)	22	19
100 kernels' weight (g)	33.5	32.0
Shattering character	Fair	No shattering
Seed color/Paddy color	White	White
Crop pest reaction (1-9 scale)		
Leaf blast	2	6
Panicle blast	1	5
Yield (tons ha ⁻¹)		
Research field	4.2	2.3
Farmers field	3.3	2.0
Mean	3.8	2.2
Year of release	2013	2006

Masl = Meters above sea level

7. Conclusion

The *Chewaka* upland rice variety was released for the benefit of upland rice growers (smallholder farmers and private investors) in western Oromia (Guttin and Chewaka) and areas with similar agro-ecologies based on its high yielding, disease resistance and desirable agronomic characteristics. Therefore, the release of the variety is expected to improve upland rice production in western Oromia in particular and similar agro-ecologies elsewhere in general.

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9. References

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