Registrations of *Korme* and *Katta* Soybean [*Glycine max* (L.) Merr.] Varieties

Abeya Temesgen*, Chemeda Daba, Tadesse Birhanu, Dagnachew Lule, Teshome Bogale and Kebede Desslgne

Bako Agricultural Research Center, P O Box 03, Bako, Ethiopia

Abstract: *Korme* and *Katta* soybean [*Glycine max* (L.) Merr.] varieties are with pedigree of AGS-129-2 and PR-145-2, respectively. These varieties were tested and released by the Bako Agricultural Research Center for Western Ethiopia and similar agro-ecological zones. *Korme* and *Katta* were evaluated for seed yield, agronomic characters and disease reaction at Bako, Boshe and Gute experimental sites between the years 2007/2008 and 2009/2010. The oil and protein contents of the two varieties were also tested. *Korme* and *Katta* soybean varieties were released because of their better seed yields as well as oil and protein contents compared to the commercial soybean variety of the same maturity group i.e. medium set. *Korme* and *Katta* were resistant to bacterial blight and bacterial pustule. The result of multi-environment yield trials showed that *Korme* and *Katta* have outperformed the commercial variety, Ethio-yogozlavia by 15 and 14% at on station and by 20 and 14% at on-farm in seed yield, respectively. The stability analysis showed that *Korme* and *Katta* were more ideal and stable in grain yield performance than Ethio-yogozlavia.

Keywords: Commercial Variety; Soybean; Stability; Pedigree

1. Introduction

Korme and *Katta* are common names for soybean [*Glycine max* (L.) Merr.] **v**arieties. These varieties were tested across multi environments (locations and years). Results from multi-location yield trials revealed that *Korme* and *Katta* were found to be superior and stable in seed yield and quality traits than the commercial variety viz., Ethio-yogozlavia. In addition, *Korme* and *Katta* varieties are resistant to bacterial blight and bacterial pustule. Hence, *Korme* and *Katta* varieties were released by the Bako Agricultural Research Center for Western Ethiopia and similar agro-ecological zones.

2. Origin and Pedigree

Korme and *Katta* soybean varieties are with pedigree of AGS-129-2 and PR-145-2, respectively. The genotypes were introduced from the International Institute for Tropical Agriculture (IITA).

3. Morphological Description

Korme and *Katta* are similar in seed shape (round), seed coat color (yellow) and seed coat luster (dull). Both are indeterminate and have erected growth habit, which enable them to prevent from pod rot during heavy rain fall. *Korme* and *Katta* have large seed size compared to the commercial variety, Ethio-yogozlavia (Table 1). Their leaf size is large and more uniform. Both are suitable for intercropping with high yielding erected leaf type maize hybrids such as BH661 and BH543.

4. Phenological Description

On three locations (Bako, Boshe and Gute) and two years (2008/2009 and 2009/2010) mean basis, *Korme* and *Katta* flowered in 64 days and matured in 137 and 138 days, respectively.

5. Agronomic Description

Korme and *Katta* were heavier than the standard check, Ethio-yogozlavia, in terms of seed weight (Table 1). *Katta* has better pod load than *Korme*. The average seeds per plant for both *Korme* and *Katta* are comparable (Table 1).

6. Yield Performance

Korme and *Katta* soybean varieties were evaluated with standard check, in multi-locations yield trials. *Korme* gave a seed yield ranging from 1.2 to 3.8 t ha^{-1} on research stations and 1.2 to 3.2 t ha^{-1} on farmers' fields (Table 1). Similarly *Katta* gave a seed yield ranging from 1.4 to 3.2 t ha^{-1} on research stations and 1.3 to 2.8 t ha^{-1} on farmers' fields (Table 1). *Korme* and *Katta* have outperformed *Ethio-yogozlavia* by 15 and 14% on station and by 20 and 14% on-farm in seed yield, respectively.

*Corresponding author. Email: abeya.tefera@uqconnect.edu.au

ISSN 1992-0407

Table 1. Summary of mean grain yield and other data of *Korme* (AGR-129-2), *Katta* (PR-145-2) and commercial variety (*Ethio-yogozlavia*) across years and locations.

Characteristics	*Korme* (AGS-129-2)	*Katta* (PR-145-2)	*Ehio-yogozlavia*
Adaptation area			
Altitude (masl)	1200-1900	1200-1900	1200-1900
Rainfall (mm)	1000-1200	1000-1200	1000-1200
Fertilizer rate			
P_2O_5 (kg ha^{-1})	46	46	46
N (kg ha^{-1})	18	18	18
Fertilizer application time	At sowing	At sowing	At sowing
Fertilizer application method	Side dressing, avoid seed contact	Side dressing, avoid seed contact	Side dressing, avoid seed contact
Planting and Seeding:			
Planting date	Early June	Early June	Early June
Seed rate (kg ha^{-1}):	60-75	60-75	60-75
Row spacing (cm)	60	5	5
Plant spacing (cm)	60	5	5
Weeding frequency	3-4	3-4	3-4
Days to flowering	64	64	63
Days to maturity	137	138	138
Number of pods per plant	29	33	33
Number of seeds per plant	49	53	52
Leaf size	Large	Large	Large
Growth habit	Indeterminate	Indeterminate	Indeterminate
Seed coat color	Yellow	Yellow	Yellow
Seed coat luster	Dull	Dull	Dull
Helium color	White	White	Black
Seed shape	Round	Round	Round
300 seed weight (g)	45	46	38
Oil content	20.53	18.82	17
Protein content	39.33	38.73	36
Crop pest reaction (1-9 scale)			
Bacterial blight	3	3	3
Bacterial pustule	2.5	2.1	2.5
Yield (ton ha^{-1}):			
Research field (t ha^{-1})	1.23 - 3.76	1.40 – 3.20	0.94-3.30
Farmer field (t ha^{-1})	1.20 - 3.20	1.30 – 2.80	0.91-2.90
Mean (t ha^{-1})	2.13	2.10	1.84
Year of release	2011	2011	2007

7. Oil and Protein Content

Seed oil and protein contents of *Korme, Katta* and Ethio-yogozlzvia soybean varieties were analyzed. The result showed that *Korme* had slightly higher oil content (21%) than *Katta* (19%). However, seed of both varieties had the same protein content (39%). *Korme* and *Katta* varieties had better oil and protein contents than Ethio-yogozlavia (Table 1).

8. Stability Performance

Yield stability comparisons for nine soybean genotypes including *Korme*, *Katta* and Ethio-yogozlzvia for two years and three locations were illustrated based on meta-analysis (GGE Biplot) method (Yan and Tinker, 2005). Genotype x environments interaction was partitioned into principal component axes and the first IPCA (65.11%) and the second IPCA (17.97%) explained the largest proportion (83.08%) of the interactions. The result of the study revealed that *Katta* (PR-145-2) and *Korme* (AGS-129-2) are ideal and stable varieties compared to the commercial variety, Ethio-yogozlavia (Figure 1). *Katta* was found to be a more stable soybean variety than Korme.

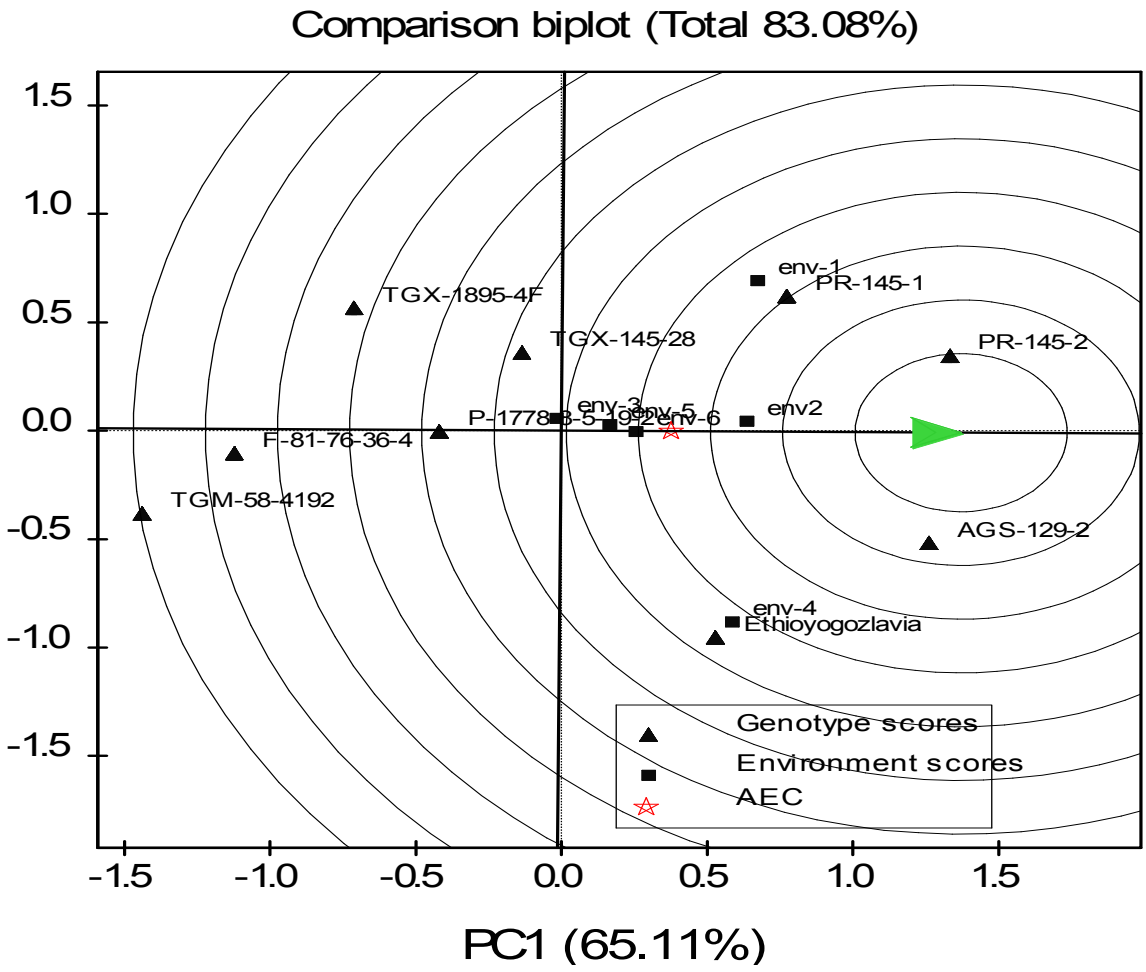

Figure 1. Ranking genotypes relative to the ideal genotype.

9. Disease Reaction

Korme and *Katta* were resistant (n < 3 where n = 1-9 scores) to the common soybean diseases viz., bacterial blight and bacterial pustule (Table 1).

10. Conclusion

The soybean varieties, *Korme* and *Katta* had higher seed yields and better stability performances than the commercial variety. The seeds of the new varieties have also higher contents of oil and protein compared to the seed of the commercial variety, *Ethio-yogozlavia*. These varieties were also resistant to common soybean diseases viz., bacterial blight and bacterial pustule and hence, have been released for Western Ethiopia and similar agro ecologies.

11. Acknowledgement

We greatly appreciate the support from the Oromia Agricultural Research Institute, Bako Agricultural Research Center and the Hawassa Agricultural Research Center.

12. Reference

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