Performance and dry root yield stability of improved cassava (*Manihot esculenta* Crantz) clones evaluated in diverse agroecological zones of Nigeria

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INTRODUCTION

Cassava is an excellent food security crop in Africa[1]. Genotype by environment interaction (GEI) becomes an important problem during cultivar recommendation. Genotypes performance were tested in five environments in Nigeria for agronomic performance and we select those with high dry root yield (DYLD) and stability of performance.

METHODOLOGY

The study compared 24 F_1 hybrids from crosses between West Africa elite genotypes crossed to genotypes introduced from East Africa or Latin America along with two check landrace cultivars (TMEB419 and TMEB693). Uniform yield trials were conducted in Ibadan, Mokwa, Ikenne, Ubiaja and Zaria in 2014/2015 cropping season using RCBD with four replications. Data generated were analyzed using SAS. Yield data were subjected to (GGE) biplot[2] to identify high yielding and stable genotypes (Table 1).

RESULTS AND DISSCUSSION

ANOVA showed significant GEI (P<0.001) for all traits studied (Table 1).Genotypes had highly resistant to cassava mosaic (CMD) and bacterial blight diseases (CBB) (table 1). GGE biplot identified G19 (IBA090574 (7.17 tha^{-1})), G12 (IBA090521 (7.31 tha^{-1})) and G22 (IBA090590 (7.52 tha^{-1})) as high yielding and stable (Fig 1 and 2). Ikenne (E2) was identified as the best among tested environments for selection of hybrids (Fig 3)

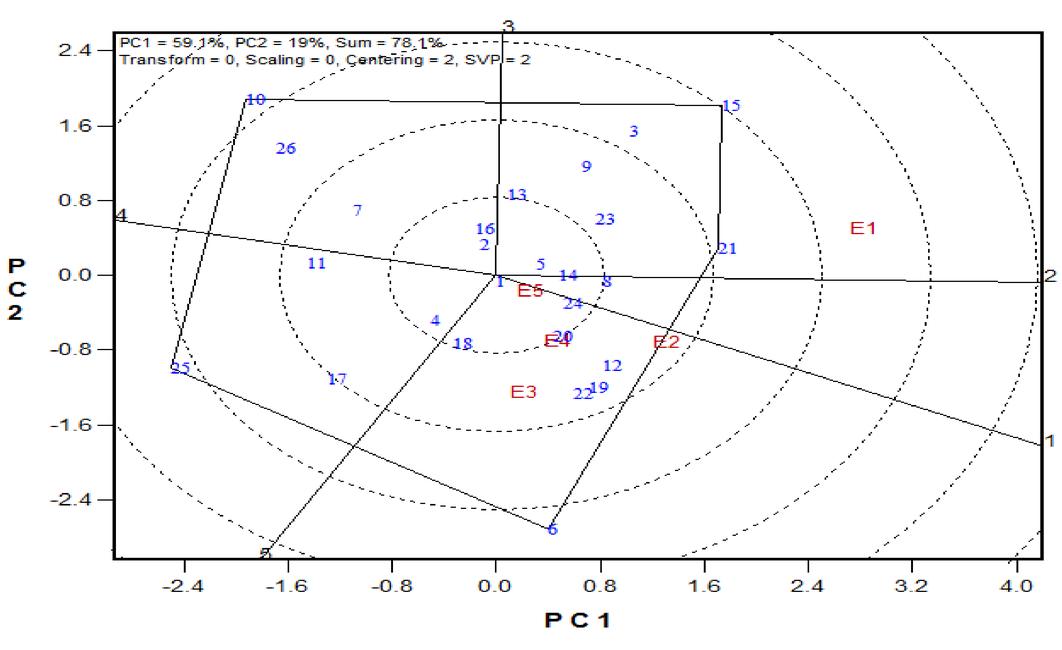

Fig 1. "Which-won-where" GGE biplot for DYLD

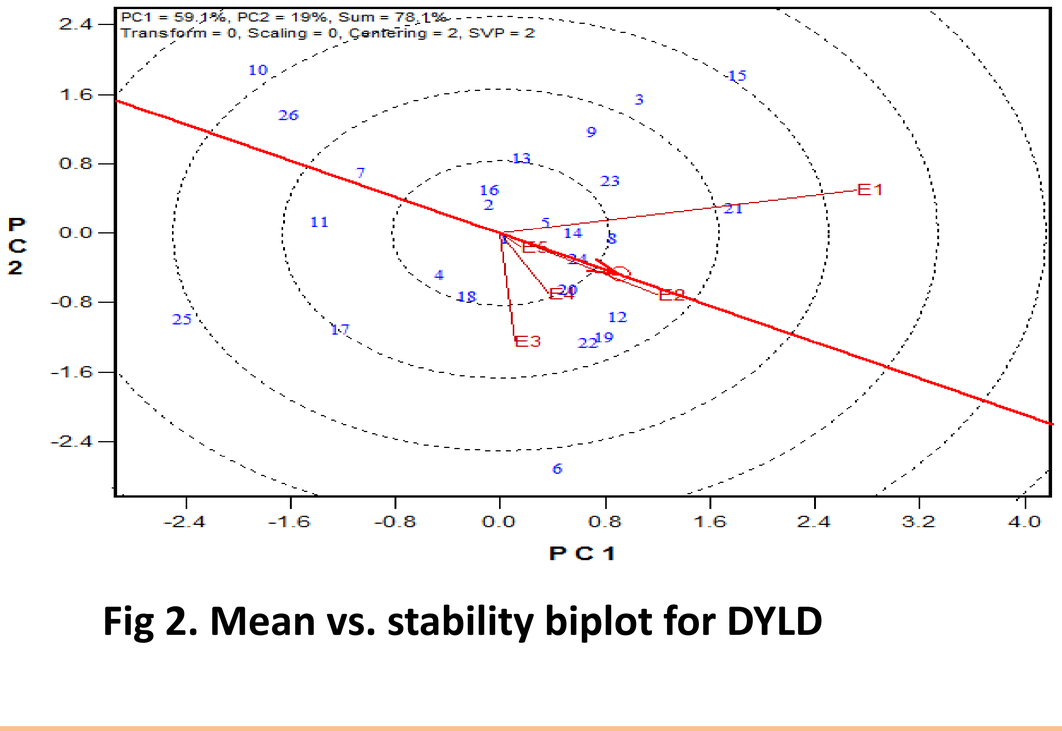

Fig 2. Mean vs. stability biplot for DYLD

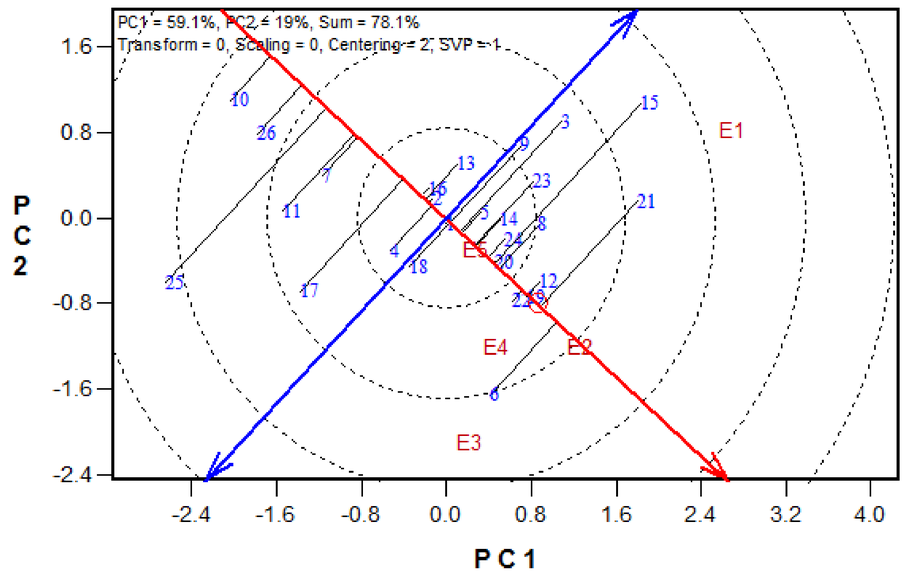

Fig 3. "discriminating vs. representativeness" view for DYLD

Table 1: Agronomic performance of test genotypes in Nigeria

GENOTYPE	Id	DYLD	MCBBS	MCMDS
IBA090506	G6	8.2	1.6	1.1
IBA090581	G21	7.5	2.0	1.1
IBA090590	G22	7.5	2.0	1.2
IBA090509	G8	7.3	1.9	1.1
IBA090521	G12	7.3	2.3	1.2
IBA090574	G19	7.2	1.8	1.2
IBA090576	G20	7.2	2.0	1.1
IBA090523	G14	7.1	2.2	1.1
IBA090536	G15	6.9	1.9	1.0
IIBA090597	G23	6.9	2.1	1.2
IBA090609	G24	6.9	2.1	1.1
IBA090510	G19	6.7	2.0	1.1
IBA090454	G1	6.5	2.2	1.2
IBA090504	G5	6.5	1.8	1.3
IBA090498	G4	6.4	2.0	1.2
IBA090564	G18	6.3	2.3	1.1
IBA090488	G3	6.2	1.8	1.1
IBA090482	G2	6.1	2.1	1.1
IBA090522	G13	6.0	2.0	1.1
IIBA090537	G16	5.8	2.3	1.1
IBA090546	G17	5.3	2.2	1.2
IBA090508	G7	5.1	1.8	1.1
IBA090520	G11	4.9	2.1	1.1
TMEB419	G25	4.5	2.5	1.4
TMEB693	G26	4.0	2.5	1.2
IBA090516	G10	3.6	2.3	1.1
Mean		6.3	2.1	1.1
GEI		***	***	***
H^2		0.56	0.39	0.19
LSD		2.13	0.48	0.17
CV(%)		17	11.8	7.6

GEI: Genotype x environment interaction, H: Broadsense heritability,

CONCLUSION

High yielding and stable genotypes with high resistance to major diseases are recommended for cultivation for increased production across the test locations.

ACKNOWLEDGEMENT

The authors are grateful to the RTB CGIAR Research Program for financial support for this research

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