

Crossing possibility for breeding promising orange-fleshed sweetpotato genotypes in Benin

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Electronic Supplementary Material (ESM)

The authors are fully responsible for both the content and the formal aspects of the electronic supplementary material. No editorial adjustments were made.

Table S1. Description of the collected data

Traits (unit)	Measurement conditions
Predominant vine colour	evaluated by considering the entire stem from base to tip between 45 and 55 days after planting
Secondary vine colour	evaluated using young stems between 45 and 55 days after planting
Vine tip pubescence	degree of pubescence of immature leaves counted at the top of the stem and collected between 45 and 55 days after planting
General appearance of leaf	described from the leaves of the middle part at 60 days after planting
Type of leaf lobe	described from the leaves of the middle part at 60 days after planting
Shape of the central leaf lobe	describe from the leaves of the middle part at 60 days after planting
Mature leaf colour	describe from the leaves of the middle part at 60 days after planting
Immature leaf colour	describe from the leaves of the middle part at 60 days after planting
Petiole Pigmentation	describe from the leaves of the middle part at 60 days after planting
Leaf area	average of 3 measurements on the leaves located in the middle part of the stem at 60 days after planting
Predominant skin colour	collected for clones rooted after 40 days
Predominant flesh colour	collected for clones rooted after 40 days

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Table S2. *P*-values and significance level of correlation between variables measured on sweetpotato genotypes

	Vine tip pubescence	Predominant vine colour	Mature leaf colour	Immature leaf colour	Lobe No.	Lobe type	Petiole pigmentation	Secondary vine colour	General leaf appearance	Central leaf lobe shape
Vine tip pubescence	NA	*	*	.	*	**	*	.	*	.
Predominant vine colour	0.0246	NA	*	.	*	.	.	.	.	.
Mature leaf colour	0.0338	0.0117	NA	.	.	.	.	.	.	.
Immature leaf colour	0.2168	0.3443	0.1535	NA	.	.	.	.	.	.
Lobe number	0.037	0.0305	0.6718	0.2415	NA		***	.	**	
Lobe type	0.0016	0.5951	0.8275	0.3157	0.0	NA		.	*	
Petiole pigmentation	0.0317	0.818	0.9248	0.4481	0.0002	0.0	NA	.	.	
Secondary vine colour	0.4481	0.818	0.9248	0.1586	0.1144	0.823	0.9228	NA	.	.
General leaf appearance	0.0236	0.8512	0.9387	0.9074	0.0029	0.0385	0.937	0.937	NA	
Central leaf lobe shape	0.1519	0.0541	0.9828	0.6746	0.0	0.0	0.0	0.9823	0.0	NA

NA – not available; . $P > 0.05$; * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

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Table S3. Flesh colour of 64 genotypes successfully developed, multiplied and rooted during 40 days after planting in Benin

Genotypes	Fleshed colour	Genotypes	Fleshed colour
ADE1	intermediate orange	FER61	pale orange
ADE4	intermediate orange	FER62	intermediate orange
ADE5	intermediate orange	FER64	intermediate orange
ADE7	intermediate orange	FER66	intermediate orange
FER1	intermediate orange	FER67	pale orange
FER2	intermediate orange	FER68	pale orange
FER4	intermediate orange	FER69	intermediate orange
FER5	intermediate orange	FER70	intermediate orange
FER6	intermediate orange	FER76	intermediate orange
FER9	intermediate orange	FER77	intermediate orange
FER10	intermediate orange	FER81	intermediate orange
FER11	intermediate orange	FER82	intermediate orange
FER13	intermediate orange	FER83a	intermediate orange
FER14	pale orange	FER83b	intermediate orange
FER16	intermediate orange	FER87	pale orange
FER18	intermediate orange	FER89	intermediate orange
FER19	intermediate orange	FER90	intermediate orange
FER20	intermediate orange	FER91	intermediate orange
FER21	intermediate orange	FER92	intermediate orange
FER22	intermediate orange	SOH1	intermediate orange
FER24	intermediate orange	SOH2	intermediate orange
FER26	intermediate orange	SOH3	intermediate orange
FER29	intermediate orange	SOH4	intermediate orange
FER30	intermediate orange	SOH5	intermediate orange
FER35	intermediate orange	SOH6	yellow
FER36	cream	TAN1	intermediate orange
FER38	intermediate orange	TAN2	intermediate orange
FER40	cream	TAN3	intermediate orange
FER46	cream	VOBO1	pale orange
FER51	pale orange	VOBO2	pale orange
FER55	white	VOBO5	pale orange
FER60	intermediate orange	VOBO6	pale orange

Table S4. Contribution of axis, and correlation between variables and axis used for genotypes clustering; the first four axes explain approximately 49.15% of the variability; variables such as leaf lobe type, shape of central leaf lobe, and petiole pigmentation are the most correlated with the first dimension (15.12%); general outline of the leaf, shape of the central leaf lobe, and immature leaf colour are the most correlated variables with the second dimension (13.41%); predominant vine colour and shape of the central leaf lobe are most correlated to the third dimension (10.99%); leaf lobe type is the most correlated variable with the fourth dimension (9.63%)

	Dim 1	Dim 2	Dim 3	Dim 4
Contribution	15.12%	13.41%	10.99%	9.63%
Predominant vine colour	0.023	0.010	0.914	0.003
Secondary vine colour	0.000	0.002	0.000	0.002
Vine tip pubescence	0.356	0.099	0.100	0.050
General leaf appearance	0.269	0.898	0.018	0.321
Lobe type	0.795	0.036	0.179	0.829
Central leaf lobe shape	0.905	0.920	0.935	0.261
Immature leaf colour	0.033	0.700	0.029	0.202
Petiole pigmentation	0.638	0.013	0.019	0.254



Figure S1. Crossing blocks established at the experimental site of University of Abomey-Calavi, Benin

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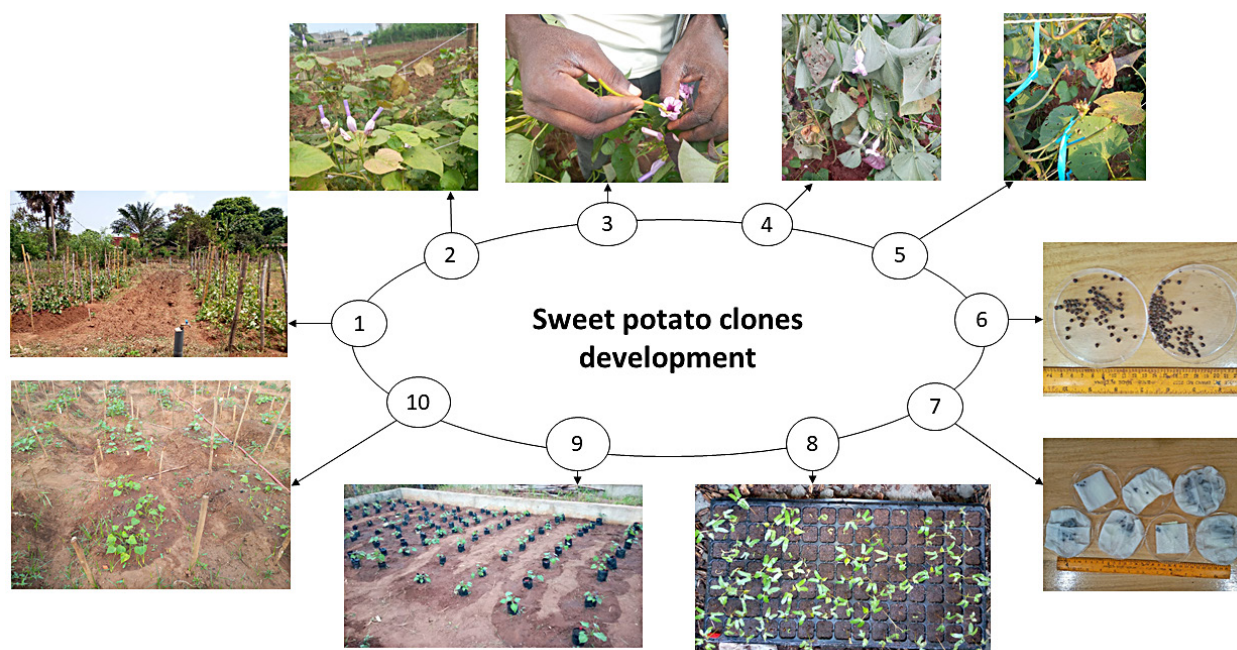


Figure S2. Steps in sweetpotato genotypes development through hand pollination

1 – established crossing blocks; 2 – use of plastic pipettes to prevent the opening of flowers (male and female) about to open in the evening on the day before pollination; 3 – pollinating the following day early in the morning before sunrise by taking a flower from the male parent plant and carrying it to the female parent plant; 4 – tie up the female parent to prevent contamination after pollination; 5 – seed development on female parent plant labelled following the number of crossing, name of parents (female × male), the date of pollination; 6 – sweetpotato seeds after threshing; 7 – soaked seeds in moistened filter paper with tap water and conserved in Petri dishes; 8 – soaked seeds sown in germination bag for a period of 4 weeks; 9 – transfer of each seedling in polythene bags filled with compost, one seedling per bag for the period of 6 weeks; 10 – multiplication separately of each genotype in large multiplication beds for the period of 10 weeks