Table S1. Principal component analysis for the quantitative variables evaluated in the 11 amaranth genotypes.

	PC1	PC2	PC3	PC4	PC5	PC6
PH	0,51	-0,15	-0,18	0,05	0,82	0,09
NL	0,24	0,53	-0,18	-0,79	-0,06	0,06
LL	0,56	0,09	0,02	0,18	-0,26	-0,76
LW	0,53	-0,01	-0,22	0,29	-0,46	0,61
IL	-0,02	-0,73	-0,51	-0,37	-0,19	-0,15
WS	-0,29	0,39	-0,79	-0,79	0,08	-0,13

PH: Plant height (cm); *NL*: Number of leaves; *LL*: Leaf length (cm); *LW*: Leaf width (cm); *IL*: Inflorescence length (cm); *WS*: Weight of 1000 seeds (g).

Table S2. Multiple correspondence analysis for the qualitative variables evaluated in the 11 amaranth genotypes.

	PC1	PC2	PC3
GH_1	0,00	0,00	0,00
SP_1	-0,37	1,65	0,10
PYS_2	0,04	-0,17	0,01
PYS_1	-0,30	1,77	0,11
PYS_5	3,14	0,08	-0,32
PYS_6	-0,32	-0,45	0,01
PAS_2	-0,30	1,77	0,11
PAS_3	-0,34	0,57	0,10
PAS_5	-0,27	-1,15	-0,10
PAS_6	-0,25	-0,45	1,09

GH: Growth habit; *SP: Stem pubescence*; *PYS:* Pigmentation of the young stem; *PAS:* Pigmentation of the adult stem.

Table S3. Mixed principal component analysis for the 11 amaranth genotypes evaluated.

	PC1	PC2
PH	0,09	0,84
NL	0,11	0,00
LL	0,38	0,42
LW	0,24	0,43
IL	0,09	0,01
WS	0,45	0,05
SP	0,14	0,24
PYS	0,91	0,83
PAS	0,34	0,65
CST	0,84	0,60
PYL	0,96	0,79
PAL	0,96	0,82
LS	0,00	0,77
ML	0,03	0,03

LVC	0,85	0,22
PV	0,10	0,15
PPE	0,88	0,59
PI	0,61	0,02
TL	0,21	0,47
ID	0,04	0,11
IS	0,79	0,18
CI	0,91	0,47
SC	0,48	0,17

PH: Plant height (cm); *NL*: Number of leaves; *LL*: Leaf length (cm); *LW*: Leaf width (cm); *IL*: Inflorescence length (cm); *WS*: Weight of 1000 seeds (g)*; SP*: *Stem pubescence; PYS:* Pigmentation of the young stem; *PAS*: Pigmentation of the adult stem; *CST*: Color of striations on the stem; *PYL*: Pigmentation of young leaves; *PAL*: Pigmentation of adult leaves; *LS*: Leaf shape; *ML*: Leaf margin; *LVC*: Color of the veins in the leaves; *PV*: Prominence of veins; *PPE*: Pigmentation of the petiole; *PI*: Position of the inflorescence; *TL*: Type of inflorescence; *ID*: Inflorescence density; *IS*: Inflorescence shape; *CI*: Color of the inflorescence; *SC*: Seed color.

Table S4. Summary of the main morphological characteristics that define the groupings of the 11 amaranth genotypes evaluated.

Cluster	Genotypes	Descriptor	Seed color
I	1, 7	Yellow stem / Yellow inflorescence	White
II	2, 5	Reddish-green stem / Pink inflorescence	White/Yellow
III	6	**Maximum pigmentation (Purple/Red-pink)**	Black
IV	4, 8, 10	Ovate leaf / Red streak / Dense inflammation	White/Yellow
V	9	**High morpho-chromatic variability**	Black
VI	3, 11	Purple inflorescence / Red streak	Black

Table S5. Summary of the main qualitative and quantitative variables that define the groupings in the mixed UPGMA analysis.

Cluster	Genotypes	Key Qualitative Descriptor	Relevant Quantitative Attribute
I	6	Purple Pigmentation / Terminal Inflammation	Total morphological divergence
II	1, 7	Yellow Stem / Yellow Inflammation / White Seed	Minimum values of vegetative vigor
III	2, 5	Infl. Pink	Intermediate values of vegetative vigor
IV	4, 8, 10	Red Stretch Marks / Red-Pink Stem / Infl.Yellow	High vegetative vigor
V	9	Pink Veins / Type 4 Pigmentation	Minimum weight of one thousand seeds (0.38 g)
VI	3, 11	Infl. Purple / Red Streak/ Black Seed	Max. values for height and inflorescence length, same weight of one thousand seeds (0.57g)