horticulturae

Supplementary Materials

Table S1. Matrix of principal component analysis for physiological parameters.

Item	PC1	PC2	PC3	PC4
Eigenvalue proportion	0.448	0.332	0.152	0.061
CEI	0.491	−0.027	0.304	−0.211
E	−0.273	−0.269	0.660	−0.075
Gs	−0.140	0.484	0.482	0.105
ICO_2	−0.397	0.378	0.007	0.316
LT	0.270	−0.358	0.132	0.879
Pn	0.467	0.106	0.381	−0.141
VPD	−0.145	−0.579	−0.054	−0.207
WUE	0.442	0.274	−0.271	0.049

Pn: Photosynthesis, Gs: Stomatal conductance, ICO_2: Internal CO_2, E: Transpiration, VPD: vapour pressure deficit, LT: Leaf internal temperature, WUE: Water use efficiency, CEI: Carboxylation efficiency index. PC: principal component.

Table S2. Synthetic variables created with hierarchical clustering of physiological and morpho-agronomic variables (qualitative and quantitative).

Trait	Synthetic variable (SV)	squared loading
Roots weight	1	0.73
Flowering habit	1	0.70
Adaxial leaf vein pigmentation	1	0.67
Roots number	1	0.63
Ground cover	1	0.62
Mature leaf size	1	0.51
Leaf Roundness	1	0.48
Stem tip pubescence	1	0.31
Abaxial leaf vein pigmentation	1	0.22
E	2	0.89
WUE	2	0.80
Leaf area	2	0.43
leaf lobes type	3	0.92
Predominant color of the stems	3	0.83
Leaf perimeter	3	0.77
Leaf Circularity	3	0.76
Petiole pigmentation	3	0.60
Petiole length	3	0.56
Leaf lobes Number	3	0.55
Plant type	3	0.52
Pn	4	0.93
CEI	4	0.91
Mature leaf colour	4	0.68
Gs	5	0.81
ICO_2	5	0.72
VPD	5	0.55
LT	5	0.52
Green	6	0.78
Inmature leaf colour	6	0.76
Blue pixel value	6	0.67

Pn: Photosynthesis, Gs: Stomatal conductance, ICO_2: Internal CO_2, E: Transpiration, VPD: vapour pressure deficit, LT: Leaf internal temperature, WUE: Water use efficiency, CEI: Carboxylation efficiency index.

Table S3. Pearson and Spearman correlation among ecophysiological parameters and quantitative and qualitative traits of morpho-agronomic description.

Parameter	Test	Pn	Gs	ICO_2	E	VPD	LT	WUE	CEI
Leaf area	P	−0.02	0.13	0.22*	−0.39***	−0.37***	−0.23*	0.31***	−0.1
Leaf perimeter	P	0.26**	−0.16	−0.35***	−0.09	0.08	0.23**	0.19*	0.32***
Leaf Circularity	P	−0.14	0.19*	0.34***	−0.14	−0.29***	−0.27***	0.06	−0.22*
Leaf Roundness	P	0.13	−0.07	−0.1	−0.25**	−0.13	0.17	0.26**	0.13
Leaf Solidity	P	−0.30***	0.14	0.38***	−0.11	−0.18	−0.26***	−0.04	−0.37
Adaxial leaf red colour	P	−0.07	−0.21*	−0.1	−0.14	0.13	0.15	0.04	0.007
Adaxial leaf green colour	P	0.01	−0.14	−0.08	−0.09	0.06	0.2	0.06	0.07
Adaxial leaf blue colour	P	0.07	−0.13	−0.18	0.03	0.15	0.22*	−0.01	0.13
Leaf lobes Number	P	0.12	−0.09	−0.23**	0.23**	0.22*	0.48***	−0.16	0.19
Roots number	P	0.15	−0.21	−0.24	0.17	0.27	0.41**	−0.1	0.15
Roots weight	P	0.06	0.03	0.07	−0.09	−0.15	0.06	0.11	0.006
Altitude	P	−0.39*	−0.13	0.19	0.3	0.28	−0.02	−0.42**	−0.36*
Twining	S	−0.4***	0.04	0.33*	0.14	0.11	−0.23	−0.34**	−0.38**
Plant type	S	−0.24	0.15	0.32*	0.08	−0.14	−0.1	−0.16	−0.27*
Ground cover	S	0.28*	0.24	0.0002	−0.24	−0.38**	0.07	0.33**	0.21
Internode length	S	−0.43***	0.07	0.29*	0.3*	0.14	0.09	−0.42***	−0.45***
Internode diameter	S	0.16	0.25	0.11	−0.23	−0.36**	−0.18	0.25	0.08
Predominant color of the stems	S	−0.09	−0.18	−0.12	0.32*	0.38**	0.06	−0.28*	0.01
Secondary color of the stems	S	−0.0024	−0.01	−0.02	−0.1	−0.02	−0.07	0.02	0.03
Stem tip pubescence	S	−0.12	0.1	0.21	0.11	−0.07	0.11	−0.08	−0.11
Stem latex	S	−0.04	−0.04	0.01	−0.11	0.03	−0.02	−0.03	−0.08
general outline of the leaf	S	0.21	−0.24	−0.35**	−0.13	0.2	0.12	0.16	0.24
leaf lobes type	S	0.04	−0.25	−0.28*	0.14	0.36**	0.27*	−0.1	0.11
Shape of central leaf lobe	S	−0.05	−0.26*	−0.25	0.1	0.32	0.23	−0.08	0.03
Mature leaf size	S	0.39**	0.14	−0.13	−0.36**	−0.39**	0.16	0.5***	0.37**
Mature leaf width	S	−0.25	0.19	0.34**	−0.17	−0.27*	−0.29*	−0.01	−0.28*
Central vein diameter	S	−0.29*	0.06	0.23	0.06	0.01	−0.19	−0.23	−0.26
Abaxial leaf vein pigmentation	S	−0.12	−0.09	0.01	−0.14	−0.02	0.04	0.01	-0.08
Mature leaf colour	S	−0.6***	−0.06	0.38**	0.1	0.17	−0.11	−0.41***	−0.61***
Inmature leaf colour	S	0.13	0.04	−0.04	−0.28*	−0.16	0.03	0.26	0.09
Petiole length	S	0.45***	0.25	−0.09	−0.18	−0.36**	0.14	0.39**	0.38**
Petiole pigmentation	S	0.2	−0.15	−0.24	−0.01	0.14	0.08	0.11	0.27*
Petiole diameter	S	−0.26	0.16	0.33*	−0.08	−0.22	−0.32*	−0.11	−0.27*
Petiole pubescence	S	−0.43***	−0.09	0.26	0.09	0.1	−0.21	−0.28*	−0.36**
leaf adaxial pubescence	S	−0.44***	−0.05	0.27*	0.1	0.08	−0.34**	−0.31*	−0.41***
leaf abaxial pubescence	94	−0.35**	−0.19	0.04	0.17	0.3*	−0.21	−0.38**	−0.28**
Flowering habit	100	0.53***	−0.09	−0.38**	−0.24	−0.1	0.44***	0.47***	0.5***

Pn: Photosynthesis, Gs: Stomatal conductance, ICO_2: Internal CO_2, E: Transpiration, VPD: vapour pressure deficit, LT: Leaf internal temperature, WUE: Water use efficiency, CEI: Carboxylation efficiency index. Significance ***: p<0.0001, **: p<0.01, *: p<0.05. S: Spearman´s correlations test; P: Pearson's correlation test.