Supplementary

Table S1. Eigenvalues for principal components obtained from PCA and significant characters within each component in the studied *Malus* species (*M. baccata*, *M. chamardabanica*, *M. mandshurica*, *M. sachalinensis*).

Parameter	PC 1	PC 2
Weight	0.0031846	−0.019089
Ascorbic acid	0.0048165	−0.0030743
Water-soluble pectin	−0.048718	−0.1214
Protopectin	−0.043461	−0.13232
Fructose	0.061197	0.002604
Sorbitol	0.39019	**0.8845**
Glucose	0.0027656	0.14067
Galactose	0.0092162	0.11118
Sucrose	**0.91631**	−0.39101

Table S2. Meteorological data for the entire research period, from 2015 to 2020 years.

2015						
Daytime temperature, °C			Nighttime temperature, °C			
Average value	Minimum	Maximum	Average value	Minimum	Maximum	Precipitations, mm
21.8	15.0	29.1	17.3	12.4	24.4	79.0
24.4	19.6	29.8	18.5	14.6	23.3	28.0
21.4	13.8	29.3	13.7	7.8	22.0	62.0
16.8	8.8	25.8	11.3	4.6	17.9	88.0
2016						
Daytime temperature, °C			Nighttime temperature, °C			
Average value	Minimum	Maximum	Average value	Minimum	Maximum	Precipitations, mm
21.1	7.8	31.0	14.8	6.8	23.2	61.0
24.1	15.3	29.9	17.4	12.2	20.8	122.0
22.9	13.6	31.9	16.1	7.4	20.9	167.0
16.0	11.6	21.3	12.2	9.3	15.8	59.0
2017						
Daytime temperature, °C			Nighttime temperature, °C			
Average value	Minimum	Maximum	Average value	Minimum	Maximum	Precipitations, mm
17.0	8.2	24.4	11.7	3.8	17.6	140
20.7	12.0	30.3	14.7	10.0	21.4	105
22.2	11.0	30.1	15.6	7.1	21.7	68
17.8	10.9	24.6	12.9	8.7	16.7	38.0
2018						
Daytime temperature, °C, °C			Nighttime temperature, °C, °C			
Average value	Minimum	Maximum	Average value	Minimum	Maximum	Precipitations, mm
20.7	10.9	28.7	13.6	6.2	22.1	56
23.1	16.7	29.3	17.6	12.5	21.8	93
24.2	18.0	28.9	15.2	10.3	20.4	28
21.7	18.1	24.8	13.5	9.8	17.7	78
2019						
Daytime temperature, °C			Nighttime temperature, °C			
Average value	Minimum	Maximum	Average value	Minimum	Maximum	Precipitations, mm
16.7	9.6	23.6	15.5	9.1	22.5	67
19.1	12.9	28.2	13.6	9.5	20.5	71
19.4	11.7	26.8	13.4	7.7	19.6	58
21.0	11.6	25.6	13.4	8.1	17.0	29
2020						
Daytime temperature, °C			Nighttime temperature, °C			
Average value	Minimum	Maximum	Average value	Minimum	Maximum	Precipitations, mm
22.2	9.8	29.8	15.5	8.1	21.1	159

21.7	15.3	28.6	15.7	9.7	20.1	175
20.9	13.6	28.5	14.2	9.6	19.8	34
17.7	12.4	23.4	13.4	9.4	21.5	66

Table S3. Ranges of calibration curves.

Analyte	Concentration, μg/ml	
	min	max
Al	0.3	45
Ca	0.1	45
Cd	0.001	45
Cu	0.005	45
Fe	0.05	45
K	1	20
Mg	0.005	45
P	0.3	45
Pb	0.03	40
S	0.5	380
Zn	0.001	45