Supplement 1 to the article: M. V. Skaptsov, M. G. Kutsev, S. V. Smirnov, A. V. Vaganov, O. V. Uvarova, A. I. Shmakov "Standards in plant flow cytometry: an overview, polymorphism and linearity issues"

Table 1
The list of plant species and varieties used

Abb.	Species	Variety	Source
R.s.	*Raphanus sativus* L.	Saxa	Institute of Experimental Botany of the Czech Academy of Sciences
S.l.	*Solanum lycopersicum* L.	Stupicke polne rane	Institute of Experimental Botany of the Czech Academy of Sciences
G.m.	*Glycine max* (L.) Merr.	Polanka	Institute of Experimental Botany of the Czech Academy of Sciences
B.p.	*Bellis perennis* L.	Unknown	South-Siberian botanical garden
Z.m.	*Zea mays* L.	CE777	Institute of Experimental Botany of the Czech Academy of Sciences
P.s.	*Pisum sativum* L.	Ctirad	Institute of Experimental Botany of the Czech Academy of Sciences
E.a.	*Epipremnum aureum* (Linden & André) G.S.Bunting	Marble Queen	Commercial variety
H.v.	*Hordeum vulgare* L.	Ditta	Institute of Experimental Botany of the Czech Academy of Sciences
S.c.	*Secale cereale* L.	Tatiana	South-Siberian botanical garden
V.f.	*Vicia faba* L.	Inovec	Institute of Experimental Botany of the Czech Academy of Sciences
A.c.	*Allium cepa* L.	Stuttgarter Riesen	South-Siberian botanical garden
A.t.	*Arabidopsis thaliana* (L.) Heynh.	Columbia	Siberian Institute of Plant Physiology and Biochemistry (SIPPB SB RAS)
O.s.	*Oryza sativa* subsp. *japonica* Shig.Kato	Unknown	South-Siberian botanical garden
F.b.	*Ficus benjamina* L.	Unknown	South-Siberian botanical garden
E.j.	*Euonymus japonicus* Thunb.	Microphyllus	South-Siberian botanical garden
P.h.	*Petunia hybrida* (Hook.) Vilm.	Zodiak	South-Siberian botanical garden
S.p.	*Solanum pseudocapsicum* L.	Unknown	South-Siberian botanical garden
P.c.	*Petroselinum crispum* (Mill.) Fuss	Moss Curled 2	Commercial variety
C.c.	*Chlorophytum comosum* (Thunb.) Jacques	comosum	South-Siberian botanical garden
A.a.	*Agave americana* L.	aureomarginata	South-Siberian botanical garden
Al.f.	*Allium fistulosum* L.	Unknown	South-Siberian botanical garden
Al.t.	*Allium tubersum* Rottler ex Spreng.	Unknown	South-Siberian botanical garden
T.r.	*Trifolium repens* L.	Rivendell	Commercial variety
H.a.	*Haemanthus albiflos* Jacq.	Unknown	South-Siberian botanical garden

Table 2
Individual measurements

		Tris-MgCl buffer				LB01 buffer				OttoI-II buffers			
	Standard	**Original HML-based value**	**Original O.s.-based value**	**Corr. value used (HML based)**	**Corr. value used (O.s. based)**	**Original HML-based value**	**Original O.s.-based value**	**Corr. value used (HML based)**	**Corr. value used (O.s. based)**	**Original HML-based value**	**Original O.s.-based value**	**Corr. value used (HML based)**	**Corr. value used (O.s. based)**
Petunia hybrida 'Zodiak'	R.s.	2.80	2.51	3.13	2.62	2.79	2.51	3.12	2.61	2.85	2.56	3.08	2.56
	S.l.	2.94	2.61	3.12	2.61	2.94	2.60	3.11	2.60	2.89	2.56	3.07	2.56
	B.p.	2.80	2.62	3.12	2.62	2.79	2.61	3.11	2.61	2.80	2.61	3.11	2.61
	P.c.	3.08		3.10	2.60	3.06		3.09	2.59	3.03		3.06	2.56
	P.s.	3.10	2.74	3.10	2.64	3.10	2.73	3.10	2.63	3.04	2.68	3.04	2.58
	Mean 2C. pg	2.95	2.62	3.11	2.62	2.94	2.61	3.11	2.61	2.92	2.60	3.06	2.57
	SD	0.13	0.09	0.01	0.01	0.13	0.09	0.01	0.02	0.10	0.06	0.03	0.02
	CV. %	4.43	3.57	0.31	0.56	4.45	3.55	0.31	0.62	3.40	2.23	0.95	0.84
2C ± RMSE. pg (R2/MAPE. %) Corr. value used (HML-based)	3.089 ± 0.049 (1.000/0.66)												
2C ± RMSE. pg (R2/MAPE. %). Corr. value used (O. s.-based)	2.606 ± 0.042 (1.000/0.74)												
Solanum pseudocapsicum	S.l.	2.70	2.39	2.86	2.39	2.68	2.37	2.84	2.37	2.65	2.35	2.81	2.35
	B.p.	2.56	2.39	2.83	2.39	2.54	2.38	2.81	2.38	2.55	2.39	2.82	2.39
	P.c.	2.80		2.80	2.37	2.81		2.81	2.39	2.81		2.81	2.38
	Z.m.	2.73		2.84	2.41	2.73		2.84	2.40	2.74		2.85	2.41
	P.s.	2.80	2.47	2.80	2.37	2.80	2.47	2.80	2.37	2.80	2.47	2.80	2.38
	Mean 2C. pg	2.72	2.42	2.82	2.39	2.71	2.40	2.82	2.38	2.71	2.40	2.82	2.38
	SD	0.10	0.04	0.03	0.02	0.11	0.05	0.02	0.01	0.11	0.06	0.02	0.02
	CV. %	3.58	1.79	0.98	0.64	3.99	2.26	0.71	0.60	4.07	2.66	0.58	0.89
2C ± RMSE. pg (R2/MAPE. %) Corr. value used (HML-based)	2.835 ± 0.035(1.00/0.55)												

2C ± RMSE. pg (R2/MAPE. %). Corr. value used (O. s.-based)	2.606 ± 0.042 (1.000/0.74)												
Bellis perennis	R.s.	3.29	2.95	3.73	3.10	3.24	2.91	3.68	3.05	3.48	3.13	3.77	3.13
	S.l.	3.56	3.15	3.78	3.15	3.48	3.08	3.70	3.08	3.56	3.15	3.78	3.15
	G.m.	3.76	3.13	3.76	3.13	3.74	3.11	3.74	3.11	3.76	3.12	3.76	3.12
	P.c.	3.72		3.76	3.13	3.77		3.77	3.18	3.72		3.72	3.10
	Z.m.	3.59		3.78	3.14	3.59		3.78	3.14	3.55		3.74	3.11
	P.s.	3.77	3.32	3.77	3.17	3.78	3.33	3.78	3.18	3.71	3.28	3.71	3.13
	E.a.		3.15	3.80	3.15		3.14	3.78	3.14		3.12	3.76	3.12
	Mean 2C. pg	3.62	3.14	3.77	3.14	3.60	3.11	3.74	3.13	3.63	3.16	3.75	3.12
	SD	0.18	0.13	0.02	0.02	0.21	0.15	0.04	0.05	0.11	0.07	0.02	0.02
	CV. %	5.06	4.17	0.54	0.75	5.88	4.85	1.10	1.55	3.15	2.08	0.64	0.49
2C ± RMSE. pg (R2/MAPE. %) Corr. value used (HML-based)	2.835 ± 0.035(1.00/0.55)												
2C ± RMSE. pg (R2/MAPE. %). Corr. value used (O. s.-based)	2.386 ± 0.03 (1.00/0.54)												
Ficus benjamina	R.s.	0.98	0.88	1.09	0.88	0.97	0.87	1.07	0.87	0.99	0.89	1.09	0.89
	S.l.	1.02	0.91	1.08	0.91	1.00	0.88	1.05	0.88	1.00	0.89	1.06	0.89
	G.m.	1.07	0.89	1.07	0.89	1.07	0.89	1.07	0.89	1.08	0.90	1.08	0.90
	B.p.	0.96	0.89	1.05	0.89	0.96	0.89	1.06	0.89	0.95	0.89	1.05	0.89
	Mean 2C. pg	1.01	0.89	1.07	0.89	1.00	0.88	1.06	0.88	1.00	0.89	1.07	0.89
	SD	0,05	0,01	0,01	0,01	0,05	0,01	0,01	0,01	0,05	0,00	0,02	0,00
	CV. %	5.00	1.05	1.34	1.05	5.14	1.16	0.86	1.16	5.48	0.56	1.78	0.56
2C ± SD, pg (CV,%) Corr. value used (HML-based)	1.069 ± 0.014 (1.32)												
2C ± SD, pg (CV,%) Corr. value used (O. s.-based)	0.888 ± 0.009 (0.97)												
Allium fistulosum	E.a.		21.33	25.38	21.33		21.19	25.21	21.19		21.49	25.57	21.49
	P.s.	24.94	22.00	24.94	21.18	25.00	22.05	25.00	21.22	25.33	22.34	25.33	21.50
	H.v.	24.96		24.96	21.49	25.03		25.03	21.55	24.97		24.97	21.49
	V.f.	25.02	22.14	25.02	21.46	25.06	22.17	25.06	21.49	25.33	22.41	24.59	21.73
	A.c.	24.88	21.92	24.88	21.33	25.05	22.08	25.05	21.49	24.78	21.83	24.78	21.25

	Mean 2C. pg	24.95	21.85	25.04	21.36	25.03	21.87	25.07	21.39	25.10	22.02	25.05	21.49
	SD	0.06	0.35	0.20	0.13	0.03	0.46	0.08	0.17	0.27	0.43	0.40	0.17
	CV. %	0.24	1.62	0.79	0.59	0.11	2.09	0.33	0.79	1.09	1.98	1.60	0.79
2C ± RMSE. pg (R2/MAPE. %) Corr. value used (HML-based)	25.004 ± 0.150(1.00/0.661)												
2C ± RMSE. pg (R2/MAPE. %). Corr. value used (O. s.-based)	21.426 ± 0.131 (1.00/0.597)												
Secale cereale 'Tatiana'	Z.m.	15.46		16.07	13.67	15.57		16.18	13.76	15.87		16.50	14.03
	P.s.	16.28	14.36	16.28	13.82	16.50	14.55	16.50	14.01	16.77	14.80	16.77	14.24
	H.v.	16.15		16.15	13.90	16.08		16.08	13.84	16.21		16.21	13.96
	V.f.	16.04	14.19	16.04	13.76	16.05	14.20	16.05	13.77	16.40	14.51	16.40	14.07
	A.c.	16.39	14.44	16.39	14.06	16.33	14.39	16.33	14.00	16.57	14.60	16.57	14.21
	Mean 2C. pg	16.07	14.33	16.19	13.84	16.11	14.38	16.23	13.88	16.37	14.63	16.49	14.10
	SD	0.36	0.13	0.15	0.15	0.35	0.18	0.19	0.12	0.34	0.15	0.21	0.12
	CV. %	2.25	0.89	0.90	1.06	2.19	1.23	1.15	0.88	2.11	1.01	1.26	0.86
2C ± RMSE. pg (R2/MAPE. %) Corr. value used (HML-based)	16.312 ± 0.256 (1.00/1.03)												
2C ± RMSE. pg (R2/MAPE. %). Corr. value used (O. s.-based)	13.966 ± 0.207(1.00/0.89)												
Allium tuberosum	V.f.	64.66	57.20	64.66	55.47	64.07	56.68	64.07	54.96	65.12	57.61	65.12	55.86
	S.c.	64.28		64.28	55.19	64.14		64.14	55.07	64.43		64.43	55.32
	A.f.			64.73	55.57			64.84	55.66			64.57	55.43
	Mean 2C. pg	64.47		64.56	55.41	64.11		64.35	55.23	64.78		64.71	55.54
	SD	0.272		0.245	0.197	0.048		0.426	0.377	0.491		0.368	0.289
	CV. %	0.42		0.38	0.36	0.08		0.66	0.68	0.76		0.57	0.52
2C ± SD, pg (CV,%) Corr. value used (HML-based)	64.540 ± 0.343(0.53 %)												
2C ± SD, pg (CV,%) Corr. value used (O. s.-based)	55.393 ± 0.289 (0.52 %)												
Solanum tuberosum	S.l.	3.61	3.19	3.82	3.19	3.55	3.15	3.77	3.15	3.60	3.19	3.82	3.19
	G.m.	3.79	3.15	3.79	3.15	3.77	3.13	3.77	3.13	3.78	3.14	3.78	3.14
	P.c.	3.81		3.84	3.25	3.80		3.83	3.24	3.72		3.76	3.18

	Z.m.	3.67		3.83	3.24	3.65		3.81	3.23	3.63		3.79	3.20
	P.s.	3.79	3.34	3.79	3.22	3.79	3.34	3.79	3.22	3.77	3.33	3.77	3.20
	Mean 2C. pg	3.73	3.23	3.82	3.21	3.71	3.21	3.80	3.19	3.70	3.22	3.78	3.18
	SD	0.09	0.10	0.03	0.04	0.11	0.12	0.03	0.05	0.08	0.10	0.02	0.03
	CV. %	2.36	3.17	0.67	1.31	2.88	3.6	0.74	1.54	2.23	3.0	0.59	0.80
2C ± RMSE. pg (R2/MAPE. %) Corr. value used (HML-based)	3.800 ± 0.034 (1.00/0,034)												
2C ± RMSE. pg (R2/MAPE. %). Corr. value used (O. s.-based)	3.200 ± 0.032(1.000/0,80)												
Chlorophytum commosum	P.s.	24.33	21.46	24.33	20.65	24.22	21.37	24.22	20.56	24.52	21.63	24.52	20.82
	V.f.	23.78	21.04	23.78	20.40	23.86	21.11	23.86	20.47	24.32	21.51	24.32	20.86
	A.c.	23.76	20.93	23.76	20.37	23.88	21.05	23.88	20.48	24.10	21.24	24.10	20.67
	Mean 2C. pg	23.96	21.14	23.96	20.48	23.99	21.17	23.99	20.51	24.31	21.46	24.31	20.78
	SD	0.322	0.278	0.322	0.154	0.202	0.170	0.202	0.052	0.209	0.201	0.209	0.101
	CV. %	1.35	1.31	1.35	0.75	0.84	0.80	0.84	0.25	0.86	0.93	0.86	0.49
2C ± RMSE. pg (R2/MAPE. %) Corr. value used (HML-based)	23.993 ± 0.22 (1.00/0.63)												
2C ± RMSE. pg (R2/MAPE. %). Corr. value used (O. s.-based)	20.553 ± 0.191 (1.00/0.635)												
Epipremnum aureum	S.l.	9.08	8.04	9.62	8.04	9.16	8.11	9.71	8.11	9.10	8.06	9.64	7.92
	G.m	9.42	7.83	9.42	7.83	9.68	8.04	9.68	8.04	9.66	8.03	9.66	8.03
	B.p	8.62	8.06	9.48	8.06	8.60	8.04	9.46	8.04	8.68	8.11	9.54	8.24
	P.c.	9.51		9.60	8.12	9.65		9.73	8.23	9.39		9.48	8.01
	V.f.	9.42	8.34	9.42	8.08	9.48	8.38	9.48	8.13	9.35	8.27	9.35	8.02
	A.c.	9.49	8.36	9.49	8.14	9.53	8.40	9.53	8.17	9.46	8.34	9.46	8.12
	Mean 2C. pg	9.26	8.12	9.51	8.04	9.35	8.20	9.60	8.12	9.27	8.16	9.52	8.06
	SD	0.35	0.22	0.09	0.11	0.41	0.18	0.12	0.08	0.34	0.14	0.12	0.11
	CV. %	3.78	2.77	0.90	1.40	4.39	2.21	1.29	0.93	3.71	1.67	1.26	1.36
2C ± RMSE. pg (R2/MAPE. %) Corr. value used (HML-based)	9.507 ± 0.118 (1.00/0.87)												
2C ± RMSE. pg (R2/MAPE. %). Corr. value used (O. s.-based)	8.115 ± 0.098 (1.00/0.86)												

Schefflera arboricola (Heptapleurum arboricola Hayata)	S.l.	4.45	3.94	4.71	3.94	4.45	3.94	4.72	3.94	4.45	3.94	4.72	3.94
	G.m	4.72	3.92	4.72	3.92	4.75	3.95	4.75	3.95	4.80	3.99	4.80	3.99
	B.p	4.24	3.96	4.66	3.96	4.22	3.94	4.64	3.94	4.29	4.01	4.72	4.01
	Z.m.	4.53		4.74	4.01	4.49		4.69	3.97	4.47		4.67	3.95
	P.s.	4.67	4.12	4.67	3.97	4.76	4.20	4.76	4.04	4.66	4.11	4.66	3.95
	E.a.		3.92	4.67	3.92		3.98	4.74	3.98		3.91	4.65	3.91
	Mean 2C. pg	4.52	3.97	4.69	3.95	4.54	4.00	4.72	3.97	4.53	3.99	4.70	3.96
	SD	0.19	0.08	0.03	0.03	0.23	0.11	0.05	0.04	0.20	0.07	0.06	0.04
	CV. %	4.28	2.12	0.70	0.81	5.04	2.80	0.98	0.99	4.36	1.88	1.22	0.90
2C ± RMSE. pg (R2/MAPE. %) Corr. value used (HML-based)	4.702 ± 0.056 (1.000/0.69)												
2C ± RMSE. pg (R2/MAPE. %). Corr. value used (O. s.-based)	3.963 ± 0.056 (1.000/0.69)												
Euonimus japonicus	F.b.			0.69	0.57			0.69	0.57			0.69	0.57
	R.s.	0.63	0.56	0.69	0.56	0.63	0.57	0.70	0.57	0.62	0.56	0.69	0.56
	S.l.	0.65	0.57	0.69	0.57	0.65	0.58	0.69	0.58	0.63	0.56	0.67	0.56
		0.64	0.57	0.69	0.57	0.64	0.57	0.69	0.57	0.63	0.56	0.68	0.56
		0.01	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.01	0.00	0.01	0.01
		2.30	1.27	0.57	0.90	2.44	1.41	0.48	1.00	0.97	0.06	1.59	1.25
2C ± RMSE. pg (R2/MAPE. %) Corr. value used (HML-based)	0.569 ± 0.006 (1.12)												
2C ± RMSE. pg (R2/MAPE. %). Corr. value used (O. s.-based)	0.688 ± 0.007 (1.09)												
Trifolium repens 'Rivendell'	S.l.	2.20	1.95	2.33	1.95	2.20	1.95	2.33	1.95	2.22	1.96	2.35	1.96
	B.p.	2.08	1.94	2.29	1.94	2.07	1.93	2.28	1.93	2.12	1.98	2.34	1.98
	P.c.	2.37		2.37	2.00	2.39		2.39	2.02	2.31		2.31	1.95
	Mean 2C. pg	2.21	1.94	2.33	1.96	2.22	1.94	2.33	1.97	2.21	1.97	2.33	1.97
	SD	0.15	0.00	0.04	0.03	0.16	0.01	0.05	0.05	0.09	0.01	0.02	0.01
	CV. %	6.59	0.19	1.59	1.73	7.30	0.52	2.29	2.42	4.27	0.71	0.89	0.74
2C ± RMSE. pg (R2/MAPE. %) Corr. value	2.326 ± 0.064 (0.997/1.184)												

used (HML-based) **2C ± RMSE. pg (R2/MAPE. %). Corr. value used (O. s.-based)**	1.950 ± 0.052 (0.997/1.134)

Notes

	R.s.	S.l.	G.m.	B.p.	Z.m.	P.s.	E.a.	H.v.	S.c.	V.f.	A.c.	F.b.	P.c.	Al.f.	Al.t.
Original HML-based value	1,11	1,96	2,5	3,38	5,433	9,09		10,43	16,2	26,9	34,89				
Original O.s.-based value	0,997	1,735	2,077	3,159		8,018	7,991			23,796	30,75				
Corrected in this work Doležel value	**1,225 (1,246 in Tris buffer/1,201 in Otto**	**2,077**	2,5	**3,732**	**5,646**	9,09	**9,507**	10,43	16,19	26,9	34,89	**1,07**	**4,5**	**25,004**	**64,54**
Corrected in this work Veselý value	**1,04in Tris buffer**/0,997 in Otto	1,735	2,077	3,159	**4,778**	**7,717**	7,991	**8,975**	**13,966**	**23,075**	**29,92**	**0,888**	**3,806**	**21,426**	**55,393**

Bold - new or corrected value

Table 3
Mean ratios of the pairs of standards

Pairs of standard	Mean Ratios	Pairs of standard	Mean Ratios	Pairs of standard	Mean Ratios
A.t./E.j.	0,531	A.c./E.a.	0,272	S.p./B.p.	0,755
A.t./F.b.	0,342	B.p./H.v.	0,351	S.p./P.c.	0,624
A.t./R.s.	0,299	P.c./H.v.	0,424	S.p./Z.m.	0,504
A.t./S.l.	0,176	P.s./H.v.	0,860	S.p./P.s.	0,308
R.s./S.l. 1-step	0,598	H.v./V.f.	0,390	S.l./S.t.	0,546
R.s./G.m.1 -step	0,504	H.v./A.c.	0,300	G.m./S.t.	0,661
R.s./P.c. 1-step	0,278	Z.m./S.c.	0,348	S.t./P.c.	0,847
R.s./S.l. 2-step	0,578	P.s./S.c.	0,550	S.t./Z.m.	0,672
R.s./B.p. 1-step	0,336	H.v./S.c.	0,646	S.t./P.s.	0,416
R.s./B.p. 2-step	0,319	S.c./V.f.	0,601	P.s./C.c.	0,373
S.l./G.m.	0,834	S.c./A.c.	0,471	C.c./V.f.	0,892
S.l./B.p.	0,553	E.a./V.f.	0,348	C.c./A.c.	0,685
S.l./P.c.	0,460	P.s./V.f.	0,334	V.f./Al.t.	0,416
S.l./Z.m.	0,371	P.s./A.c.	0,257	S.c./Al.t.	0,252
S.l./P.s.	0,230	V.f./A.c.	0,771	A.f./Al.t.	0,386
B.p./P.s.	0,407	E.j./F.b.	0,644	E.a./A.f.	0,375
G.m./P.s.	0,269	E.j./R.s.	0,566	P.s./A.f.	0,362
G.m./B.p.	0,666	E.j./S.l.	0,329	H.v./A.f.	0,418
G.m./P.c.	0,551	F.b./R.s.	0,883	A.f./V.f.	0,934
B.p./P.c.	0,825	F.b./S.l.	0,514	A.f./A.c.	0,714
P.c./P.s.	0,495	F.b./G.m.	0,430	A.f./H.a.	0,342
G.m/Z.m.	0,457	F.b./B.p.	0,282	V.f./H.a.	0,370
P.c./Z.m.	0,793	R.s./P.h.	0,395	Al.t/H.a.	0,895
Z.m./P.s.	0,614	S.l./P.h.	0,670		
S.l./E.a.	0,215	P.h./B.p.	0,828		
G.m./E.a.	0,261	P.h./P.c.	0,686		

B.p/E.a.	0,392	P.h./Z.m.	0,543		
P.c./E.a.	0,469	P.h./P.s.	0,339		
V.f./E.a.	0,350	S.l./S.p.	0,732		